

PARAMEDIC PERSPECTIVES OF COMMUNITY PARAMEDICINE AND QUALITY OF  
WORK LIFE IN NORTHERN ONTARIO, CANADA

by

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## Abstract

The purpose of this study was to understand the perspectives of paramedics regarding community paramedicine (CP) and their quality of work life (QoWL) in Northern Ontario, Canada. Paramedics from eight emergency medical services (EMS) were recruited to participate in an online survey that was distributed to them via REDCap software. The survey contained several CP-specific questions and the *23-Item Work-Related Quality of Life Scale*. The findings indicated that the vast majority of paramedics are in favour of CP, however repeated service interruptions, a lack of training, and patient data tracking were identified as issues that should be mitigated to ensure successful CP program development in the future. There was a statistically significant relationship between paramedic participation in CP and QoWL. These findings have implications for EMS employers and decision-makers related to the effectiveness of CP program activities, and they provide emerging insight into the relationship between QoWL and CP in Northern Ontario.

## Keywords

Paramedic, EMS, community paramedicine, program evaluation, quality of work life, mental health, rural health, occupational stress.

## Paper 1 Co-Authorship Statement

Chapters two (Paper 1) and three (Paper 2) were prepared as manuscripts for submission for publication respectively.

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## List of Abbreviations

ACP: Advanced Care Paramedic

AEMCA: Advanced Emergency Medical Care Assistant

CAW: Control at Work

CCP: Critical Care Paramedic

CDC: Centre for Disease Control

CMA: Canadian Medical Association

CP: Community Paramedicine

CTAS: Canadian Triage Acuity Scale

EAP: Employee Assistance Program

ED: Emergency department

EMS: Emergency medical service

GWB: General Well-Being

HWI: Home-Work Interface

JCS: Job/Career Satisfaction

JDCF: Job Demand Control Framework

LHIN: Local Health Integration Network

MOHLTC: Ministry of Health and Long-Term Care

MOL: Ministry of Labour

OSI: Operational Stress Injury

PCC: Paramedic Chiefs of Canada

PCP: Primary Care Paramedic

PTSD: post-traumatic stress disorder

QoWL: Quality of Work Life

SAW: Stress at Work

WCS: Working Conditions

WSIB: Workplace Safety Insurance Board

## Chapter 1 : Introduction

The aging population and vast geography are contributing causes to rising health care costs in the province of Ontario, Canada (Government of Ontario, 2010). The Ontario Ministry of Health and Long-Term Care (MOHLTC) has proposed a patient-centred care model that aims to address gaps in health-care delivery. This plan was designed to optimize health service integration, improve links to primary care, increase access to community and home care (MOHLTC, 2015). One proposed solution to improve health care delivery, especially with respect to seniors, was utilizing paramedics in a community-based health promotion program called Community Paramedicine (CP); where paramedics provide health promotion and education to patients in a non-emergency environment. In 2014, six million dollars was allocated to launch 30 CP programs across the province of Ontario, with the aim of reducing unnecessary ambulance utilization and emergency department visits for seniors (Sinha and Foster, 2017). Due to the non-conventional nature of CP, there remain questions about how CP may affect the occupational experiences of paramedics.

Paramedics are more susceptible to develop operational stress injury (OSI) and a diminished quality of work life (QoWL) due to a high-stress work environment (Regehr & Millar, 2007; MOHLTC, 2015; Paramedic Chiefs of Canada, 2014). There exists a paucity of literature that has studied paramedic QoWL, especially in Northern Ontario. In addition, there are studies that have provided evaluations of CP programs however, there is a limited body of evidence that has evaluated CP programs from the perspectives of paramedics and how this new extended role has affected their occupational experiences (O'Meara, Stirling, Ruest & Martin,

2016; Brydges, Denton & Agarwal, 2016; Russell, Sherman, Prevost, Nixon, Ritchie et al., 2017). The purpose of this thesis was to: (1) gain insight into paramedic perspectives of CP, and (2) understand factors that may affect paramedic QoWL in eight emergency medical services (EMS) across Northern Ontario.

## 1.1 Overview of Paramedicine in Ontario

In Ontario, there are approximately 7,000 paramedics who provide pre-hospital transportation and emergency care to injured or ill patients who require medical attention (MOHLTC, 2012). There are 53 certified land ambulance operators in 440 municipalities and First Nations communities in Ontario, and one air ambulance operator in the province (MOHLTC, 2012).

In Ontario, a paramedic is defined as:

...a person employed by or a volunteer in an ambulance service who meets the qualifications for an emergency medical attendant as set out in the regulations, and who is authorized to perform one or more controlled medical acts under the authority of a base hospital medical director, but does not include a physician, nurse or other health care provider who attends on a call for an ambulance (Government of Ontario, 1990, p. 3).

Paramedicine is not currently a self-regulated health profession in Ontario, however it is a highly regulated profession through provincial legislation and medical directives. Paramedics and the duties which they may perform are governed by the Ambulance Act R.S.O. 1990, c.A.19 (Ambulance Act, 1990) and base hospital medical directives (MOHLTC, 2012); these duties are



often referred to as *delegated acts*. A paramedic is an individual who meets the qualifications for employment set out in the Ambulance Act and who is authorized by the medical director of a base hospital program to perform the delegated acts as outlined in Table 1, which differ between different levels of paramedicine including: primary care paramedics, advanced care paramedics and critical care paramedics under Regulation 257/00 (MOHLTC, 2015). Paramedics perform delegated acts that are overseen by a medical director at a base hospital and services are managed through local district services boards or upper tier municipalities. Paramedics deliver pre-hospital emergency care under the guidelines of the Ontario Ministry of Health Basic Life Support (BLS) Patient Care Standards or Advanced Cardiac Life Support Patient Care Standards (MOHLTC, 2012). A summary of roles and responsibilities for the three levels of paramedics are presented in Table 1.

**Table 1: Overview of Ontario Paramedic Competencies (MOHLTC, 2012)**

Paramedic Level	Responsibilities
Primary Care Paramedic (PCP)	<ul style="list-style-type: none"> <li>• Conduct patient assessments</li> <li>• Provide basic airway management</li> <li>• Administer oxygen</li> <li>• Perform CPR</li> <li>• Provide basic trauma care (wound care, spinal manipulation, and limb immobilization)</li> <li>• Provide symptom relief medication administration (glucagon, oral glucose, nitro-glycerin, epinephrine, salbutamol and ASA (80 mg form))</li> <li>• Perform semi-automated defibrillation under supervision of a base hospital director</li> </ul>
Advanced Care Paramedic (ACP)	<p>In addition to the PCP duties, ACPs may:</p> <ul style="list-style-type: none"> <li>• Provide advanced airway management (oral and nasotracheal intubation)</li> </ul>

	<ul style="list-style-type: none"> <li>• Perform laryngoscopy and removal of foreign objects</li> <li>• Perform basic field mechanical ventilation</li> <li>• Conduct 12-lead ECG</li> <li>• Administer of Schedule 1 medications and additional medications as directed by base hospital director</li> <li>• Perform manual defibrillation under supervision of a base hospital director</li> </ul>
Critical Care Paramedic (CCP)	<p>In addition to PCP and ACP duties, CCP's may:</p> <ul style="list-style-type: none"> <li>• Administer any additional medications as directed by a base hospital director</li> <li>• Perform needle thoracostomy and cricothyroidotomy</li> <li>• Interpret x-rays and blood values</li> </ul>

## 1.2 Paramedic Education

The standard requirement to become a PCP in Ontario is to have a Ministry of Health and Long-Term Care Advanced Emergency Medical Care Assistant (AEMCA) certification, which can be obtained after graduation from a college-based paramedic education program. Students can enroll in Canadian Medical Association (CMA)-certified college programs ranging from one to two years in length to obtain the necessary education to become eligible to write the AEMCA examination. This includes 800+ hours of classroom learning, ~300 hours of practical learning, and a minimum of 450 hours of clinical field placement (MOHLTC, 2012). Typically, an additional year of college training is required for those paramedics who wish to obtain an ACP designation (MOHLTC, 2012). In some other countries, such as the United Kingdom and Australia, paramedics require a baccalaureate degree from a recognized three to four year paramedic program offered at a university (Hou, Rego, & Service 2013).

In recent years, many paramedic services in Ontario have initiated CP programs, and this has led to a discussion on the additional competencies and training required for this non-traditional service that is beyond the scope of regular paramedicine duties (O'Meara et al., 2016). Many programs do not include education and training on health promotion or the social determinants of health even though this curriculum would be useful in the practice of CP.

Some paramedics involved in CP in Northern Ontario received training in the form of six online modules which contained topics on: social determinants of health, home safety assessments, medication reconciliation, and health education in collaboration with a local college institution with an accredited primary care paramedic program (Russell et al., 2017). Additional training included instruction of proper usage of CP-tracking software in which paramedics could electronically log CP-activities with patients (Russell et al., 2017).

### 1.3 Community Paramedicine in Ontario

CP is an evolving model of community-based health care where paramedics function outside their usual emergency response and transport roles. The purpose of this new role is to reduce the number of unnecessary emergency 911 calls and emergency department (ED) visits; and improve patients' general health by becoming more proactive in addressing patient care in the home and community (Russell et al., 2017). Depending on EMS call volumes; there may be paramedics who participate in CP on a full-time basis or on a part-time basis. Funding for initiating 30 pilot CP programs in Ontario began in late 2014, and most of these programs were launched in early 2015 (Sinha et al., 2017 ; Russell et al., 2017).

One of the primary strategies employed in CP is to identify frequent emergency medical service (EMS) users and proactively arrange to meet with those patients (Brydges, Denton &

Agarwal, 2016). Consultations are usually provided via home visits and/or at wellness clinics. An ad hoc home visit is a service that is provided by community paramedics where paramedics visit clients' homes and monitor their health status, provide assessments for daily living activities, record client vital signs, and provide referrals as may be required (MacIsaac, 2014). Patients receiving an ad hoc home visit are identified by: (1) analysis of dispatch data or by paramedics themselves; (2) referred from an interaction with paramedics at a wellness clinic; or (3) referred by circle of care partners such as hospital discharge planners, physicians, and nurses from Local Health Integration Networks (LHINs) (MacIsaac, 2014).

Wellness clinics are usually held in a public setting (e.g., social housing complexes for seniors, community arenas, or exhibits at local events) where paramedics invite local residents, usually seniors, to participate. At these clinics, paramedics provide health education, answer patient inquiries, measure patient's vital signs (such as blood pressure), and provide referrals to more appropriate health care services (MacIsaac, 2014).

## 1.4 EMS Call Volumes in Ontario

From an EMS perspective, a primary source of job demand comes from ambulance call volumes. Typically, the call volume of paramedic services in Northern Ontario are much lower compared to Southern Ontario, and this is to be expected due to such large differences in the population density and geographic coverage areas. In 2016, the Manitoulin-Sudbury EMS received 8,734 calls with 49.4% being classified as life-threatening emergencies (MSDSB, 2017). This Manitoulin-Sudbury paramedic service has a complement of 139 paramedics. In comparison, the Toronto Paramedic Services received 220,677 calls with 11.9% being classified as life-threatening (Toronto Paramedic Services, 2017). The Toronto Paramedic Service has a complement of 1,014 paramedics. The Manitoulin-Sudbury District has a land area of 43,312

square kilometres with a population of 21,546 (Statistics Canada, 2017a), whereas the Toronto District has a land area of 630.20 square kilometres with a population of 2,731, 571 people (Statistics Canada, 2017b). Thus, paramedics from the Manitoulin-Sudbury District in Northern Ontario have lower call volumes than paramedics in the Toronto Police Service, but calls are more often classified as life-threatening and travel distances are further, resulting in longer response times.

To determine land ambulance response urgency, EMS providers use the Canadian Triage Acuity Scale (CTAS) which has five levels: (1) resuscitation, (2) emergent, (3) urgent, (4) less urgent, and (5) non-urgent. The Ontario standard for cardiac arrest (i.e., an example of a CTAS 1 call) is six minutes from the initial 911-emergency call (MOHLTC, 2016). The performance percentage for rural and Northern EMS providers reaching their patient within six minutes ranges from 32.1% with rural EMS providers compared to 88.5% for larger urban-based EMS providers (MOHLTC, 2016). One of the main issues with land ambulance response times in rural and Northern regions, compared to Southern Ontario, are the large distances paramedics must transport patients from the injury scene to the hospital. Thus, there are substantial differences between paramedic services from Northern and Southern Ontario, and this is reflected in call volumes, population distribution, travel distance, and response times. This Canadian standard places a demand on paramedics and this is particularly challenging in Northern Ontario. These operational factors are all aspects of job demands that can affect the job-related stress of paramedics.

## 1.5 Operational Stress Injury in Paramedicine

Increasingly, Operational Stress Injury (OSI) has become a high priority issue in paramedicine (Paramedic Chiefs of Canada [PCC], 2014) and across all EMS providers in

Ontario. The term, OSI, can be defined as “any persistent psychological difficulty resulting from operational duties... and is used to describe a broad range of problems which include diagnosed psychiatric conditions such as anxiety disorders, depression, and PTSD as well as other conditions that may be less severe, but still interfere with daily functioning” (Veterans Affairs Canada, 2018). In addition, there has been little to no evidence that has highlighted the QoWL of paramedics or efforts to improve QoWL. OSI is becoming more recognized as an occupational health and safety issue amongst paramedic services all across Canada, and this highlights the importance for future understanding and research in this area (PCC, 2014).

In 2014, the Paramedics Chiefs of Canada (PCC) distributed a report entitled “Operational Stress Injury in Paramedic Services: A Briefing to the Paramedic Chiefs of Canada” (PCC, 2014). This report provided an overview of how OSI affects paramedics across Canada. Other issues related to OSI include substance abuse and suicide risk (PCC, 2014).

The authors of the PCC report outlined many important factors that addressed potential causes, as well as strategies to mitigate the OSI of paramedics (PCC, 2014). This report included seven recommendations for addressing paramedic mental health concerns:

“(1) Realize stakeholder responsibility for addressing OSI, (2) Change health behaviours in paramedic organizations to better identify and support paramedics, (3) Identify local paramedic service’s operational stress issues, (4) Outline prevention, intervention and treatment of OSI, (5) Develop models sensitive to paramedic needs, (6) Provide programming to target OSI, and (7) Measure the effect of OSI prevention programs” (PCC, 2014 p. 10).

This OSI report from the PCC is important for several reasons. It confirmed the stressful nature of the paramedic profession and stated that investigating the sources of stress in paramedic organizations and amongst paramedic employees is necessary. Additionally, the authors stated that creating services and programs that address stress and psychological wellness are necessary to show a commitment to improving the well-being of their employees (PCC, 2014).

## 1.6 Mental Health in the Workplace

Beyond paramedicine, mental illness is the leading cause of disability in Canada, with one in five Canadians having a mental illness (Canadian Association for Mental Health, 2012). The economic burden of mental illness is \$51 billion per year, and this is related to direct health care costs, as well as indirect costs such as lost productivity and lower quality of life (Canadian Association for Mental Health, 2016). In Canada, there were approximately 355,000 disability cases and 175,000 workplace absences due to mental illness (Association of Workers Compensation Boards of Canada, 2016). Compared to all occupational groups in Canada, those who work in health and social services have the highest injury rates with 43,836 injuries occurring in healthcare professionals in 2015 (Association of Workers Compensation Boards of Canada, 2016). The cost of mental illness to Canadian employers was \$51 billion; these costs were related mainly to turnover, long-term disability and absenteeism (Canadian Association of Mental Health, 2017).

Despite being at high risk for OSI and other related mental illnesses, there are only a few studies related to the mental illness of paramedics. One study found that the two most common sources of workplace injury for paramedics are musculoskeletal injuries and mental illness

(Roberts, Minainyo, Helen, Ross, & Ollie et al., 2015). Additionally, first responders (including police and fire fighters) have higher rates of suicidal thoughts compared to other occupations and the general Canadian population (Stanley, Hom, & Joiner, 2016). In response to high rates of mental illness, the Government of Ontario has passed legislation changes to ensure that first responders have the resources and workplace psychological support they need to help mitigate OSI in the workplace with the *Supporting Ontario's First Responders Act (Posttraumatic Stress Disorder)*, S.O. 2016. c. 4 – Bill 163 (Supporting Ontario's First Responders Act, 2016).

Employee assistance programs (EAPs) offer support for workers suffering from poor mental health. These EAPs are valuable programs which address employee well-being and also offer short-term counselling services to employees experiencing work and life stressors (Oliver and Levine, 2015). Peer support is another support service that is available to some paramedics and first responders in the workplace. Peer support provides workers with emotional and social support to others who have shared a common traumatic experience (Mental Health Commission of Canada, 2017). Although peer support is offered by many paramedic organizations, there is little evidence of its effectiveness in improving stress-related symptoms (Lowery & Stokes, 2005; McCall, 2009).

There are a few strategies that are being implemented to reduce the prevalence of mental illness amongst paramedics and other first responders. The Department of National Defense and the Canadian Armed Forces developed a mental health training program called *Road to Mental Readiness* to educate veterans on mental health training and resiliency to target post-traumatic stress disorder (PTSD) and other operational stress injuries (Government of Canada, 2015). Since its development in 2015, the *Road to Mental Readiness Program* has been adopted by paramedic, police, and fire organizations across Canada, including those in Northern Ontario.



In 2016, the Ministry of Labour (MOL) revised the *First Responders Act* to require all Ontario first responder organizations requiring preparing a plan for addressing OSI by April 26, 2017. This plan required all paramedic services across the province to submit PTSD Prevention Plans to ensure there were workplace supports in place to mitigate occupational causes of work-related stress (Ministry of Labour, 2017). This requirement came at a time when pilot CP programs were in their infancy.

## 1.7 Job-Demand-Control Framework

There is limited research that has identified what factors influence OSI and QoWL for paramedics. However, the Job-Demand-Control Framework (JDCF), developed by Karasek (1979), provides a useful theoretical framework for exploring the factors that may impact paramedic QoWL, specifically in relation to job demands and job control. According to Karasek (1979), psychological strain results from a combined effect of work demands and decision-making capacity (Karasek, 1979). The JDCF has been used extensively in psychological research. According to Ibrahim, Aida & Ohtsuka, (2012), “the Job-Demand-Control (JDC) and Job-Demand-Control Support (JDCS) models are the most widely used theoretical frameworks that relate the characteristics of a job to health and well-being” (Ibrahim, Aida & Ohtsuka al., 2012 p. 10). The JDCF and JDCS both measure job demand and control whereas the JDCS contains an additional job support predictor (Ibrahim et al., 2012). The JDCF has two main components: job demands and job decision latitude (control). Job demands that are high with low decision latitude are associated with higher psychosocial stress and physical illness (Kristensen, 1995). A job demand refers to a combination of psychological demands (workload, pace, stressors, high intensity) and physical demands such as exposure to dangerous environments and physical exertion (Regehr & Millar, 2007). Control refers to workers’ abilities to make their own

decisions at work (Regehr & Millar, 2007). Hence, the JDCF seems to provide an explanatory framework for the work-related stress experienced by many paramedics who operate in an environment of high job demands and low decision latitude due to the non-optional requirement to respond to every emergency dispatch call. Figure 1 graphically portrays the JDCF.

Decision Latitude (Control)	Psychological Demands	
	Low	High
High	Low Strain	Active
Low	Passive	High Strain

**Figure 1: Karasek's Job Strain Model (Karasek, 1979)**

As an example, the JDCF may help to explain how more passive job-related characteristics and duties, such as in some rural paramedicine areas where call volumes are low, can lead to higher levels of job-related satisfaction. And alternatively, it may help explain the high job strain experienced during an emergency call where psychological demands are high, and decision latitude is low; which could be likely due to the constraints of the *Ambulance Act* R.S.O 1990 (Ambulance Act, 1990) and the restricted ability to only perform delegated acts. Though, it is important to note that these regulations exist to ensure patient safety, consistency in assessment and treatment, and to legally protect paramedics. Through a literature search, no examples were found where the JDCF model has been applied to rural paramedicine. However, the literature has demonstrated that higher decision latitude and job control increases quality of work life with urban paramedics (Regehr & Millar, 2007), nursing staff (Laschinger, 2001;

Nowrouzi, Lightfoot, Carter, Lariviere, Rukholm, et al., 2015), and other health professionals (Elovainio, Forma, Kivimaki, Sinervo, Sutinen et al., 2005).

The JDCF was used in a mixed methods study involving paramedics where the underlying factors of job demands, control, and support were analyzed (Regehr & Millar, 2007). Regehr and Millar used the Beck Depression Inventory and qualitative interviews, to identify major stressors that occurred with 86 paramedics in a large urban area. The paramedics indicated that their main work-related stressors were emotional intensity, fast-paced environment, excessive amounts of work, and little control in being able to make their own decisions at work (Regehr & Millar, 2007). This study used the JDCF to demonstrate that urban paramedics indicated their working environment to be high demand, low control, and low support (Regehr & Millar, 2007). In Ontario, paramedic roles and responsibilities are outlined in the Ambulance Act and supervised/approved by a medical director (Ambulance Act, 1990). Arguably, this results in low latitude for job control since paramedics are bound by legislation to act in prescriptive ways. Yet, due to the unpredictable nature of the job, work demands can range from low to high, depending on call volume and severity of patient injuries or ailments. Additionally, recent changes to job responsibilities and the operational role of a paramedic may also impact job demand and control. This JDCF was applied to the study due to its job demand and job control constructs which are similar to the stress at work and control at work constructs of QoWL. In relation to the introduction of CP, this practice allows for more leniencies in job-related duties of paramedics compared to paramedics who practice only conventional paramedicine hence, there may be an effect on the control at work and stress at work of paramedics.

## 1.8 Rationale

At the conceptualization of this thesis, CP was in its infancy in Ontario, and the majority of research regarding CP program evaluation and implementation were from the perspectives of patients (Brydges et al., 2016). According to the Centre for Disease Control (CDC), the theoretical framework for program evaluation in public health includes engaging stakeholders who are either involved in the program, those who the program are intended for, or primary users of the evaluation (CDC, 1999). Since paramedics in Northern Ontario are the personnel who are directly involved in the program, and will be primary users of the evaluation as CP practitioners, the purpose of chapter 2 of this thesis is to evaluate early developed CP programs from the perspectives of paramedics to learn program successes and areas for improvement.

Operational stress injury (OSI) is a prevalent issue in paramedicine and there is a need for paramedic organizations to understand what factors affect the work experiences of the paramedics that are employed with them to mitigate these issues (PCC, 2014). Quality of work life (QoWL) was determined to be an important construct of interest of this study due to its holistic nature and its relation to mental illness of health care professionals (Nowrouzi et al., 2015). Due to the high stress environments experienced by paramedics in the workplace, and the unexplored nature of QoWL for rural paramedics, chapter 3 presents findings on the personal and organizational factors that may predict QoWL that may be informative to paramedic management personnel in the development of workplace mental health strategies. In relation to the JDCF, chapter 3 also explored the potential relationship of QoWL and CP duties. The findings could be utilized by paramedic management personnel in determining beneficial job duties/stressors for their frontline paramedics to provide more desirable job experiences which

the OSI White Paper by the PCC outlines the important need to understand these factors (PCC, 2014).

## 1.9 Thesis Chapter Overview

The paramedic profession is constantly evolving and this is evident through the recent launch of community-based health programs such as CP and through new legislation that targets occupational stress in the workplace. This thesis follows an integrated paper format where two independent studies are prepared for submission to peer-reviewed journals. The data presented in this thesis was collected via an online survey containing questions regarding program evaluation of CP and a validated *23-Item Work-Related Quality of Life Scale (WRQoL)Scale* (Van Laar, Edwards & Easton). The following two chapters of this thesis present experiences and perspectives as reported by frontline paramedics across eight different paramedic services in Northern Ontario. Chapter 2 (Paper 1) presents frontline paramedic perspectives on their experiences related to practicing CP. Chapter 3 (Paper 2) focuses on paramedic QoWL in Northern Ontario and provides insight into what organizational and personal factors may affect paramedic QoWL. One of the organizational factors of interest was related to practicing CP since it was hypothesized that this may enhance QoWL. The overall integrating theme of both chapters is an explorative investigation into the occupational experiences of paramedics who practice with various EMS providers across Northern Ontario, with a particular focus on CP. The aim is that this will inform paramedic employers and other decision-makers on developing strategies and policies for improving occupational experiences of paramedics in Northern Ontario.

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## Chapter 2 : Paramedic perspectives of community paramedicine in Northern Ontario, Canada (Paper 1)

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Note:

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## 2.1 Abstract

Community paramedicine (CP) is a community-based health program that was launched throughout Ontario in 2015. Of the 30 initially funded CP programs, several were established in Northern Ontario. CP enables paramedics to provide health promotion and education to patients with high ambulance utilization rates and to other members of the community, often seniors. Several program evaluations of CP exist from the perspective of patients; however there is a dearth of evidence regarding CP from the perspectives of paramedics. The purpose of this study was to examine paramedic perspectives related to various components of CP and opinions on overall CP program effectiveness in rural and urban centres across Northern Ontario.

An online survey was created and distributed to 879 paramedics with and without CP experience employed at eight emergency medical services (EMS) providers in Northern Ontario. The survey consisted of 37 items that were related to different aspects of CP such as wellness clinics, home visits, and referrals. Additional attitudinal items sought paramedic opinions regarding the program. Data consisted of quantitative responses to Likert-type questions and responses from open-ended questions. An explanatory sequential design was used to analyze and synthesise the results from the quantitative survey items and the open-ended responses. Quantitative data was analyzed using descriptive statistics, chi-square and Fisher's Exact test analyses to determine statistically significant differences between urban and rural paramedics. A thematic analysis was used to examine the responses from the open-ended questions.

There was a 21.0% (185/879) response rate for the survey related to CP-specific questions. Less than half ( $n = 75$ ; 40.5%) of the 185 total survey respondents participated in a CP program, and the majority of 75 paramedics who indicated they participated in CP ( $n = 41$ ; 54.4%) were from rural areas. CP was generally well received by both paramedics currently

practicing CP and those who were not practicing CP. Results indicated that the majority of paramedics who participated in CP, (67.1%) were satisfied with CP as it demonstrated a perceived improvement in patient's health and well-being, and the vast majority (86.3%) of paramedics who responded believed that more paramedics should be practicing CP in the future. Paramedics identified *developing professional relationships* and improving *health promotion* as positive aspects of CP. Areas for CP program improvement included *better organization and scheduling, improved training*, and a need for *better patient tracking software*.

Other studies have shown CP to be favorable for improving the health of patients; this study provides insight into the perspectives of both paramedics practicing CP and those not practicing CP. The majority of paramedics responding to the survey were in favour of CP and preferred to practice a combination of both regular EMS and CP duties. Engaging and consulting paramedics in the ongoing process of CP development and implementation is important to ensure they feel valued and are part of the change process. It is also important to ensure paramedics are contributing to the development of the CP programs in which they work. CP in areas where the survey was distributed may benefit from understanding front-line work experiences and insights relevant to paramedics in a Northern Ontario context.

## 2.2 Background

In Canada, the province of Ontario's current model of health care delivery is transforming towards patient-centred health care (Sinha, 2012). This conceptualization values health promotion, chronic care management, and a patient-centred approach that considers the social determinants of health (Ontario Ministry of Health and Long-term Care [MOHLTC], 2015). There are many drivers of this transformation of health care delivery including the aging

population of Ontario requiring increased health care services (Sinha, 2012). This highlights a need for improved home and community care (Government of Ontario, 2010).

Northern Ontario possesses a vast geography which covers more than 800,000km<sup>2</sup>, where 40% of the population lives in rural communities that are culturally diverse with many Indigenous and rural Francophone communities that are located hundreds of kilometres away from tertiary health care centres (Government of Ontario, 2010) and physicians (Pitbaldo, 2005). Northern Ontario is composed of two large health boundaries: the Northeast and Northwest Local Health Integration Networks (LHINs). These areas contain many rural communities with only a few urban communities. In regards to the geographic distribution of physicians in Ontario, in 2015 there were 107 primary care physicians per 100,000 with a lower geographic distribution of physicians in Northern Ontario regions. This translates to increases in travel times for primary care access for a considerable number of residents compared to Southern Ontario (Green, Gozdyra, Frymire, & Glazier, 2017). In addition, the majority of Northern Ontario's physicians work in urban centres (Wenghofer, Timony & Pong, 2011). People who live in Northern Ontario have higher rates of chronic diseases and experience health care provider shortages (Sinha, 2012). These health and socio-demographic challenges play a role in the inequitable delivery of health care and present a need for more creative community-based health care programs in Northern Ontario. Some of these can be delivered by paramedics practicing community paramedicine (Sinha, 2012).

In recent years, paramedics in Ontario have become more involved in providing patient-centred health care in patients' homes and at clinics. Funded by the Ontario Ministry of Health and Long-Term Care (MOHLTC), a province-wide community paramedicine (CP) pilot program was launched in 2015 (Russell, Sherman, Prevost, Nixon, Ritchie et al., 2017). The goal was to

provide improved patient care in home and community contexts, and to reduce the high rates of unnecessary emergency department visits and hospital admissions (Russell et al., 2017).

Community paramedicine (CP) is an evolving model of community-based health care where paramedics function outside their usual emergency response and transport roles (Russell et al., 2017). In Canada, the emergency response dispatch system is activated when patients, caregivers, or bystanders call emergency services. The original purpose of this new CP role was to reduce the number of unnecessary emergency calls, emergency department (ED) visits, and improving patient health promotion by becoming more proactive in addressing patients' health needs in their home and community (Russell et al., 2017). Proponents of CP in Ontario suggest that the practice will not only decrease health care costs but also improve the care and experience of patients and their caregivers (MOHLTC, 2012).

Progress in the development of Ontario CP programs was influenced by a supportive White Paper report on future health care delivery in Ontario entitled *Living Longer, Living Well*, which compiled recommendations informing Ontario's Seniors Strategy for health (Sinha, 2012). In Sinha's report, one of the recommendations was that "the MOHLTC, in collaboration with Local Health Integration Networks (LHINs) and local municipal Emergency Medical Services (EMS) programs, should explore the development and expansion of CP programs across Ontario, especially in Northern and rural communities" (Sinha, 2012, pg. 13). Sinha has been one of the leading advocates supporting CP through its early development across Ontario in recent years. It is important to note that his recommendation highlights the particular relevance of CP for the Northern and rural context.

One of the primary strategies employed in the Ontario model of CP is to identify frequent users of EMS through dispatch data; paramedics can then identify and proactively arrange to



consult or meet with those patients who frequently call 911 (Brydges et al., 2016). CP consists of several essential consultations that are delivered to patients. Consultations are usually provided via ad hoc home visits and/or at wellness clinics. An ad hoc home visit is a service where paramedics visit patients in their homes and monitor their health status, provide assessments for activities of daily living, record client vital signs, and provide medical referrals that may be required (Russell et al., 2017). Wellness clinics are usually held in a public setting (e.g. social housing complex for seniors, community centre, or booth at local events) where paramedics invite local residents, usually seniors, to participate and provide health education, blood pressure readings and medication reconciliation (Brydges et al., 2016). Rural and Northern CP programs are unique compared to larger urban CP programs in Southern Ontario because urban programs usually have dedicated community paramedics or paramedics who devote their entire shift to performing CP duties. However, in rural CP programs in Northern Ontario, it is more common for paramedics to practice both conventional paramedicine and CP during the same shift.

There has been research that has studied the patient perspectives of Ontario CP programs (Russell et al, 2017; Brydges et al., 2016 ; O'Meara et al., 2016 ; Martin & O'Meara, 2019), however there is a paucity of literature related to paramedic perspectives of CP. To understand the outcomes and impacts of a community-based health program, it is important to understand the program from the perspectives of all parties involved. This would enhance comprehensive recommendations to the CP program if it is to be sustainable and positively received in the future by both patients and paramedics (Posavac, 2016). Important constructs to consider are paramedic training and education that may be necessary for CP (O'Meara et al., 2016; Iezonni, Domer & Ajahi, 2016) and the paramedic-patient professional relationship (Brydges et al, 2016 ; Mulholland, Stirling & Walker, 2009).

Due to the non-conventional scope of CP, there is a need for paramedics to receive additional education to better meet the needs of their patients (O'Meara et al., 2016). Additionally, CP involves paramedics practicing outside their conventional emergency-based breadth of expertise; this presents a need for additional education and training that better prepares paramedics to move from emergency-based medicine to a health promotion and prevention approach (O'Meara et al, 2016 ; Iezonni et al., 2016). Health promotion training has been found to be beneficial for paramedics in practicing an extended model of care in Australia (Reeve, Pashen, Mumme, De La Rue & Cheffins, 2008). Expanded training has also been shown to improve the decision-making/job control of paramedics when they are treating patients in a non-emergency setting similar to CP (Cooper, Barrett, Black, Evans, & Real at al., 2004). At the conceptualization of this study, the majority of paramedics employed by Northern Ontario EMS providers received CP training via six online modules containing information regarding health legislation, health education practices, and conducting in-home assessments. In other jurisdictions in Ontario, full-time CPs received more rigorous CP training for six weeks, and this included curriculum in health assessment, health promotion, pharmacology, and clinical placements under the direction of specialists or physicians (Drennan, Dainty, Hoogveen, Atzema, Barette et al., 2014).

Another important factor when considering how paramedics may perceive CP is the patient-paramedic professional relationship, and this may be strengthened in a CP context compared with an emergency response context (Brydges et al., 2016; Mulholland et al., 2009). The conventional model of paramedicine usually involves treating patients in ambulance vehicles and transporting them to a hospital to be cared for by medical staff; paramedics then leave without knowing about the outcomes related to the patient's illness or injury. Often the

duration of the paramedic-patient interaction in an emergency context can be measured in minutes. In Australia, paramedics with expanded roles have indicated an increased sense of community belonging from the longer interaction and relationship development when treating patients multiple times in their homes (Mulholland et al., 2009).

With CP, paramedics become more familiar with patients as they treat them over repeated visits. Patients involved in CP programs have expressed their satisfaction in developing friendships with some of the paramedics (Brydges et al., 2016). There are many elderly patients living without a spouse or family member(s), and the paramedic providing care to them in their home becomes a confidant and a person with whom they enjoy interacting (Brydges et al., 2016).

Along with the increased time treating patients, extended paramedic roles may lead to a more established paramedic-patient professional relationship, especially in rural communities (O'Meara, Tourle, Stirling, Walker & Pedler, 2012). Community involvement has improved with extended roles of paramedics because of the opportunity for increased social interaction, the facilitation of a healthy lifestyle education, and the consideration of the social determinants of health with their patients (O'Meara et al., 2012). Extended paramedic roles also seem to compliment the roles of other community health professionals as extended role paramedics assist in filling in gaps in health care delivery in rural areas (O'Meara et al., 2012).

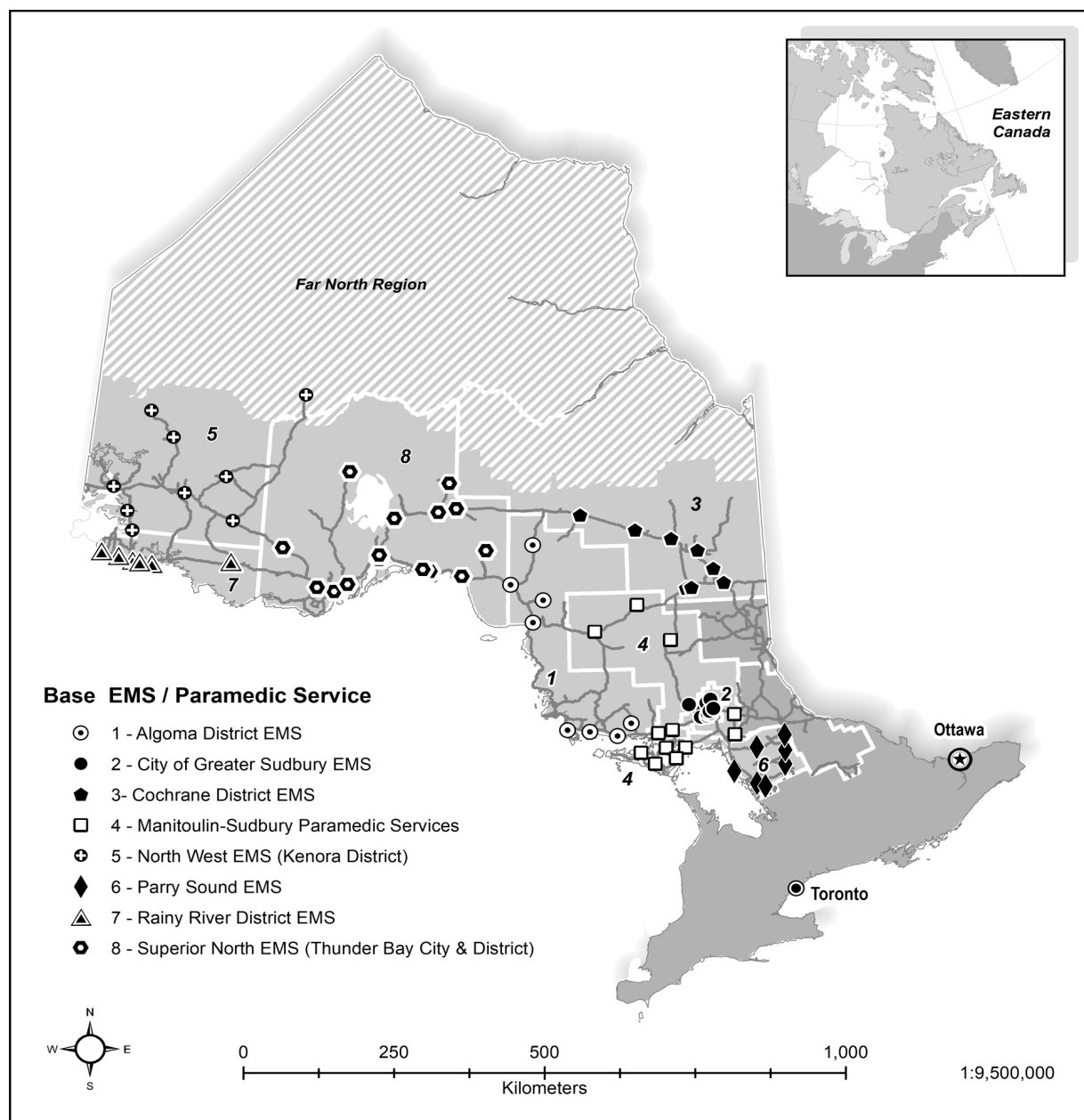
A Cochrane systematic review identified 11 studies related to CP programs (Bigham, Sioban, Kennedy, Drennan, & Morrison, 2013). Ten of the 11 studies demonstrated that CP was positively received by patients. A CP-type program in which paramedics in Australia had an expanded scope of practice was viewed as generally positive by paramedics and improved work-related experiences of paramedics (Reeve et al., 2008); similar results were found in the United

Kingdom (Cooper, O'Carroll, Jenkin, & Badger, 2008). Though there have been previous evaluation activities regarding CP, there is a need for further research related to CP in Canada from the perspective of paramedics. The theoretical Framework for Program Evaluation in Public Health, developed by the Centre for Disease Control (CDC), outlines effective methods for health program evaluation. To ensure adequate program evaluation and program implementation, it is important to collect evidence from those who are stakeholders in the program and those who either benefit from or deliver the health programs, such as paramedics directly involved in practicing CP (CDC, 1999).

The purpose of this paper was to evaluate several pilot CP programs in Northern Ontario from the perspectives of paramedics to gain program recommendations related to both rural and urban settings across Northern Ontario. The research question was: What are the experiences and perspectives of paramedics related to pilot CP programs launched in Northern Ontario? The study was primarily designed to help inform decision-makers on CP program improvement and sustainability.

## 2.3 Methods

This study consisted of surveying paramedics in eight districts located in Northern Ontario (Figure 2), Canada. Data was collected via an online questionnaire using closed- and open-ended questions. A sequential explanatory research design was employed, the primary source of data was quantitative and the supplemental data from the open-ended responses provided further explanation and aided interpretation of the quantitative data (Creswell, 2013) through thematic analysis (Clarke and Braun, 2013).



**Figure 2: Map of Eight Participating EMS Providers in Northern Ontario**

### 2.3.1 Northern Ontario Paramedic Survey Development

In November 2015, researchers from the Centre of Rural and Northern Health Research at Laurentian University conducted four focus groups consisting of paramedics, community health providers, and hospital officials throughout Northern Ontario. The purpose of these focus

groups was to gather information related to several CP Pilot Projects that were being initiated across Northern Ontario; the results were used to help develop the Northern Ontario Paramedic Survey (NOPS). A modified approach to Dillman's Mail and Internet Design method was used to maximize response rate and minimize respondent bias (Dillman, Smyth, & Christian, 2009). The theoretical Framework for Program Evaluation in Public Health, developed by the Centre for Disease Control, guided the design of the study in regards to development CP-related items on the survey from the perspectives of program experts; paramedics working in Northern Ontario (CDC, 2009). To ensure adequate program evaluation and program implementation, it is important to collect evidence from those who are stakeholders in the program and those who either benefit from or deliver the health programs, such as paramedics directly involved in practicing CP (CDC, 1999).

The process of survey development involved generating CP-specific questions that were modified in consultation with paramedic commanders. The survey was pilot tested with paramedics to ensure survey functionality, comprehension, and relevance using principles of cognitive interviewing (Collins, 2013). This study focused on evaluating responses to the questions related to CP, and there was a sub-set of questions for paramedics with experience practicing CP about their experience with specific aspects of CP services that they may have been involved in (wellness clinics, home visits, referrals, and remote patient monitoring). The closed-ended questions consisted of Likert-type response options: "strongly disagree", "disagree", "agree", "strongly agree" and "do not know". The purposes of the CP questions were to gain a wide variety of paramedic perspectives regarding several aspects of CP services to gain insight into positive components and areas for program improvement.

The final survey instrument and informed consent process was prepared for online distribution using REDCap (Harris, Taylor, Thielke, Payne, & Gonzalez, et al., 2009). Ethics approval was obtained from the Laurentian University Research Ethics Board on October 28<sup>th</sup>, 2016 (REB #:6009514).

### 2.3.2 Survey Administration

The online questionnaire was distributed to eight paramedic services via an invitation email that was sent to the EMS Chief, Commander, or CP lead in each district across Northern Ontario, Canada. The email, containing a link to the online survey and informed consent process, was then distributed to all paramedics. Paramedic services were designated as Northern if they were located in the Northeast and Northwest health regions known as Local Health Integration Networks (LHINs). Rural was defined as communities with less than 30,000 people (Government of Ontario, 2010). The EMS providers were instructed to distribute the email invitation to participate in the online questionnaire to only front-line primary care and advanced care paramedics; paramedic chiefs and commanders were excluded. The eight participating EMS providers were located in the Rainy River, Algoma, Kenora, Superior North, Cochrane, Manitoulin-Sudbury, City of Greater Sudbury and Parry Sound districts and are presented graphically on the map in Figure 2. For the purpose of this study, these services are described collectively as EMS Providers. The majority of these EMS Providers provide pre-hospital care to rural areas throughout Northern Ontario, although paramedics employed with these services do also provide pre-hospital care in several larger, urban centres. Six of the eight EMS Providers involved in this study are relatively unique in that CP was practiced with on-duty paramedics who practiced CP duties in addition to their conventional emergency response duties, and the City of Greater Sudbury EMS and Superior North EMS utilized paramedics fully devoted to

practicing only CP. The number of paramedics working in these districts, at the time of the survey administration, was estimated to be 879. This population included a combination of primary care paramedics (PCPs) and advanced care paramedics (ACPs) working full-time and part-time. At the time of survey distribution, the percentage of the 879 paramedics working in the EMS districts who were male was estimated to be 67.7% (n= 595) and the percentage of paramedics who worked as full-time paramedics was estimated to be 60.9% (n = 535).

### 2.3.3 Data Analysis

All data collected using REDCap was downloaded, cleaned, and error-checked before analysis. Surveys that contained completed CP-related questions regarding wellness clinics, home visits, program successes, and areas for improvement were used for the analysis. The overall approach to the data analyses was Creswell's Explanatory Sequential Design Method (Cresswell, 2013) which focuses primarily on analyzing quantitative data with the open-ended data used to support and assist in the interpretation of the quantitative data.

The quantitative data was analyzed using SPSS Version 20 (IBM Corp, 2011). The demographic data (sex, age, certification level, years employed, employment status, LHIN geographical area, and work location) and CP program-specific data were summarized using descriptive statistics. Statistically significant differences in demographics of those respondents who participated in CP compared to those who did not were examined using Chi-square analyses and Fisher's exact tests. Due to the substantive differences between urban and rural CP programs, a Chi-Square analysis was used to explore the differences in perspectives from paramedics practicing in these two different contexts.



The open-ended data for CP-related questions were analyzed using Clarke and Braun's thematic analysis technique to uncover themes emerging from the text (Clarke and Braun, 2013). As described by Clarke and Braun, the thematic analysis process included familiarization of the data in which several reading phases were conducted to understand the more in-depth meaning of the text (Clarke and Braun, 2013). The next phases included generating initial codes, and these codes were then used to develop specific themes related to the overall CP program. The results from this data analysis were organized using descriptive statistics and themes related to overall CP, wellness clinics, and home visits.

## 2.4 Results

Out of the 879 paramedics who were eligible to participate, 185 (21.0%) completed CP-related questions on the survey and were included for the analysis. The average length of time paramedics practiced CP was between 6 months to one year at the time of survey administration. There were 75 (40.5%) participants who self-identified as having experience with CP for an EMS Provider with a formally established CP program (Table 2). Paramedics with CP experience were classified as having CP exposure and may not necessarily practice CP full-time. With the exception of the City of Greater Sudbury, and Superior North EMS services, the combined expectation of the EMS providers was that all paramedics were to be trained to practice CP as it was to be included in their job duties along with responding to emergency-911 calls.

**Table 2: Characteristics of Paramedic Respondents**

	<b>% Total (n=185)</b>	<b>%CP (n=75)</b>	<b>%Non-CP (N=110)</b>
<b>Sex</b>			
Male	71.6 (133)	64.0 (49)	76.9 (84)
Female	28.4 (52)	36.0 (27)	23.1(25)
<b>Age</b>			
20-35	47.0 (87)	48.0 (36)	46.4 (51)
36-50	35.1 (65)	33.3 (25)	36.4 (40)
51-65	17.8 (33)	18.7 (14)	17.2 (19)
<b>Certification**</b>			
Primary care paramedic	85.3 (158)	96.0 (72)	78.0 (86)
Advanced care paramedic	14.7(27)	4.0 (3)	22.0 (24)
<b>Years Employed</b>			
0-9.9 years	46.5 (86)	52.0 (39)	42.7 (47)
10.0-19 years	27.0 (50)	18.7 (14)	32.7 (36)
20-29 years	16.2 (30)	18.7 (14)	14.6 (16)
30 + years	10.3 (19)	10.7 (8)	10.0 (11)
<b>Employment Status</b>			
Full-time	70.6 (131)	65.3 (49)	74.3 (82)
Part-time/Casual/Modified Duty	28.4 (54)	34.7 (26)	25.7 (28)
<b>LHIN Geographical Area</b>			
Northeast	65.4 (121)	61.3 (46)	68.2 (75)
Northwest	34.6 (64)	38.7 (29)	31.9 (35)
<b>Work Location***</b>			
Rural	54.4 (101)	82.7 (62)	34.9 (39)
Urban	45.7 (84)	17.3 (13)	65.1 (71)

(\*\*Chi squared  $p < 0.01$ , \*\*\*Chi squared  $p < 0.001$ )

The chi-square ( $X^2$ ) analysis indicated that significant differences between paramedics who participated in a CP program and those who did not was related to certification ( $X^2$  (1,  $N=185$ ) = 8.79,  $p = 0.012$ ) and work location ( $X^2$ (1,  $N= 185$ ) =19.66;  $p < 0.001$ ) (Table 2). Of the 75 paramedics with CP experience, 60.0% ( $n = 45$ ) participated in wellness clinics, and 72.0% ( $n = 54$ ) participated in-home visits.

The Fisher's Exact test findings are located in Table 3 and provides a summary of perspectives from only the paramedics practicing CP ( $n = 75$ ) related to the type of service in which they were involved (i.e., wellness clinics vs. home visits), satisfaction with CP, practice

preference (CP vs. conventional duty), and length of time participating in CP. When asked which paramedic duties they would prefer to practice, 66.7% (n= 50) of the 75 paramedics who practiced CP indicated they would prefer a combination of regular EMS duties and CP, with 27.8% (n= 21) indicating EMS only, and 5.6% (n= 4) preferring to practice only CP (Table 3). When compared to their rural counterparts, northern urban paramedics appeared to be more positively receptive of CP. The results showed a higher percentage of urban paramedics indicating the desire to either practice CP duties only (15.4% urban [n= 2] vs. 3.4% rural [n = 2]) or a combination of regular EMS duties and CP duties (76.9% [n=10] urban vs. 64.4% rural [n=40]) (Table 3). In regards to CP service type, rural paramedics were most likely to provide home visits as a CP service (p= 0.038). There were no other statistically significant differences detected between urban and rural CPs.

**Table 3: Service type, satisfaction, and preferences of urban and rural paramedics practicing CP**

	<b>% Total (n=75)</b>	<b>% Urban (n=13)</b>	<b>% Rural (n=62)</b>
<b>Paramedic CP Participation†</b>			
Wellness Clinics	60.0 (45)	76.9 (10)	56.5 (35)
Home Visits	72.0 (54)	46.2 (6)	77.4 (48)*
<b>Satisfaction with CP</b>			
Very Dissatisfied/Dissatisfied	21.9 (17)	0.0 (0)	26.7 (17)
Satisfied/Very Satisfied	67.1(50)	84.6 (11)	63.3 (39)
Do not Know	11.0 (8)	15.4 (2)	10.0 (6)
<b>Practice Preference</b>			
Regular EMS Only	27.8 (21)	7.7 (1)	32.2 (20)
CP Only	5.6 (4)	15.4 (2)	3.4 (2)
Combination of EMS & CP	66.7 (50)	76.9 (10)	64.4 (40)

† Multiple responses possible; columns do not add up to 100%.

\*Fisher's Exact = 0.038

### 2.4.1 Overall Impressions of CP

When paramedics were asked if they were satisfied with the overall impacts and outcomes of the program, two-thirds (67.1%, n = 50) were satisfied or very satisfied, while 21.9% (n =17) were dissatisfied, and 11.0% (n = 8) were not sure. Most paramedics with CP experience also stated that more paramedics should be permitted to practice CP with 76.7% (n = 65) agreeing with this statement. Paramedics who practiced CP (Table 4) were asked to indicate their opinions about CP through their agreement with a number of statements about program-specific aspects. The survey item that resulted in the strongest agreement from paramedics were with respect to the receptiveness and appreciation of the patients (97.3% [n =71] Agree/Strongly Agree). Other CP-related items are summarized in Table 4.

**Table 4: Paramedic Perceptions of CP- Program**

	<b>Agree/Strongly Agree % (n)</b>	<b>Disagree/Strongly Disagree % (n)</b>	<b>Do Not Know/ Not Applicable % (n)</b>
<b>Community Paramedicine Overall (n = 73)</b>			
I found the patients/clients in the community paramedicine program receptive and appreciative of the care and services I provided.	97.3 (71)	0.0 (0)	2.7 (2)
I found the community paramedicine program tasks interfered with my regular work duties; it was difficult to accommodate them and balance my workload effectively.	32.9 (24)	54.8 (40)	12.3 (9)
The community paramedicine program has improved my sense of belonging in the community where I work.	54.3 (40)	20.6 (15)	24.7 (18)
I believe community paramedicine helped in improving camaraderie with my fellow paramedic colleagues.	26.0 (19)	43.8 (32)	30.1 (22)
I believe community paramedicine helped to keep me updated on my clinical skills. (n = 72)	26.4 (19)	62.5 (45)	11.1 (8)
<b>Wellness Clinics (n = 45)</b>			
The wellness clinics were acceptable to patients/clients	86.7 (39)	6.7 (3)	6.7 (3)
The home visits were effective at improving the well-being of patients/clients. (n = 44)	61.4 (27)	15.9 (7)	22.7 (10)
The wellness clinics were an effective way to reduce the non-emergency use of 911 services and emergency department visits by patients/clients.	46.7 (21)	24.4 (11)	28.9 (13)
<b>Home Visits (n = 54)</b>			
The home visits were acceptable to patients/clients	92.6 (50)	3.7 (2)	3.7 (2)
The home visits were effective at improving the well-being of patients/clients	75.9 (41)	13.0 (7)	11.1 (6)
The home visits were an effective way to reduce non-emergency use of 911/EMS services and emergency department visits by patients/clients.	59.2 (32)	22.0 (12)	18.8 (10)

This next section presents the qualitative findings that offer insights related to paramedic perspectives compiled from analysis of the responses to open-ended questions at the end of the survey. The open-ended responses when paramedics were asked: “What did you like about the CP program”? generated to two themes: (1) developing professional relationships; and (2) promoting patient health. When paramedics were asked “what could be done to improve CP programs?”, three themes emerged from the data were: (1) lack of CP-related training; (2) fear of service interruptions (related to wellness clinics); and (3) need for improved patient data tracking (related to home visits).

**Developing professional relationships.** Paramedics indicated that CP provided the opportunity for them to develop professional relationships with patients. The additional time spent with patients during a CP interaction seemed to be an important factor that enabled paramedics to develop relationships and follow-up with patients. Here are two supportive comments when paramedics were asked: “what did you like about the CP program?”

*Having the ability to develop a friendly relationship with patients and other people in the community. Being sociable with the residents of the seniors homes.*

(ID 110)

*Get out into public easier to sit and chat and get detailed assessment when we are not trying to beat the clock. Working in non emergency setting allows for more connection and follow up with patients.*

(ID 165)

**Promoting patient health.** Another common theme that arose from the open-ended data was the opportunity afforded paramedics to improve a patient's health status through CP. This was viewed as both health education and emergency prevention, as evidenced in the following two comments.

*The aspect of giving individuals the opportunity to take their health into their own hands. Being able to open doors to them on how to take care of themselves. A lot of older residents want to get better but simply do not know how and this provides them with the resources to help themselves.*

(ID 067)

*Gets more involved with regulars and frequent callers with conditions that can be looked at prior to 911 calls. Then referred as needed for an appointment with a doctor before hand before that next 911 call is placed.*

(ID 098)

**Lack of CP-Related Training:** Although CP was generally well-received by paramedics, there were also issues and challenges. To gain further insight into these challenges and issues, paramedics were asked what they felt could be improved. The main theme was that paramedics perceived that there was a lack of CP-related training.

Several paramedics voiced their frustration with the lack of training they received before they began practicing CP, and this was seen as detrimental to the program. Most paramedics received little to no training and indicated they would view CP as being more

beneficial if additional training were to be offered. This sentiment is portrayed in the following comments.

*The skills required to participate in a CP program are simple however different from what paramedics are now use to. I believe it's important to brush up on interpersonal skills when dealing with patients in a CP program.*

(ID 012)

*I feel that the training could be more. I feel that the 1 to 2 hour training is not adequate to help it reach its fullest potential. I feel that there should be more training with paramedics being able to expand scope of practice for medication.*

(ID 053)

*Education surrounding chronic disease management should be completed prior to any home visits or wellness clinic participation. Patients constantly seek advice on their chronic conditions and we do not have the training needed to educate them.*

(ID 143)

## 2.4.2 Wellness Clinics

Paramedic responses related to their involvement in WCs (n = 45) were generally positive as portrayed in Table 4. In particular, 86.7% (n = 39) of respondents agreed that WCs were acceptable to patients, while 61.4% (n = 28) agreed that WCs improved the well-being of



patients. With respect to whether WCs reduced the number of unnecessary EMS calls, 46.7% (n = 21) of paramedics indicated that they agreed, while 24.4% (n = 11) disagreed, and the remaining 28.9% (n = 13) did not know.

**Fear of Service Interruptions:** Though generally well received, many paramedics indicated the possibility of having to leave WC patients in order to respond to an emergency call as being one of the major concerns about the WCs. The risk of possibly having to abandon WCs was perceived as a service interruption that impeded the success of the WCs, as evidenced in the following comments.

*I find when we do wellness clinics we are still on shift and a few times we got a call while all these people were waiting for us and I find that completely disrespectful.*

(ID 012)

*Should not be done by on line crews. The risk of being called away by 911 and leaving the wellness clinic abandoned is too strong. Should be completed by dedicated crew or light duty medic who is not responsible for 911 calls.*

(ID 219)

The fear of service interruption was perceived as lack of organization and detrimental to the quality of the CP program. Paramedics indicated the need for an improved system for managing wellness clinics that would mitigate having to leave to respond to an emergency call.

### 2.4.3 Home Visits

The responses related to home visits (HVs) (n = 54) were generally positive, as portrayed in Table 4. The vast majority of paramedics indicated that they believed the HVs were acceptable to the patients (92.6% agreed, n = 50), and that paramedics agreed they improved patient well-being (75.9% agreed, n = 41). However, similar to the paramedic responses regarding WCs, fewer paramedics agreed that the HVs assisted in reducing the number of unnecessary EMS calls, with 59.2% (n = 32) agreeing, 22.0% (n = 12) disagreeing, and 18.8% (n = 10) indicating they did not know.

**Need for Improved Electronic Patient Data Tracking:** Although paramedic perspectives related to their involvement in HVs were generally positive, the paramedics' responses to open-ended questions indicated there was a need for better documentation and patient reporting when performing HVs. Paramedics indicated they would appreciate better electronic patient tracking as it would ease the burden of paperwork and data compilation after the call. An electronic patient data collection system would also provide information to enhance the delivery of services. The following comments from paramedics echo this sentiment.

*Better documentation standards, including the use of an electronic, retrievable form to track patient status (e.g. to discuss trends with patient during visit) [...] it's not an emergency, but it's still an ambulance call. It should be treated and documented as such. Consider these visits 'medical appointments' instead of just a vital-signs checkup.*

(ID 030)

*Better tracking through same system as emergency calls. pt's consent to us accessing their history through EPCR (Electronic Patient Care Reporting) to create more seamless system. expand regions served by CP and expand capabilities of CP.*

(ID 183)

These two paramedics expressed their frustration with a lack of adequate patient documentation and tracking when reflecting back on their home visits with CP-enrolled patients.

## 2.5 Discussion

It is evident from the results of the survey that the majority of paramedics were positive when describing CP program overall. Many of the paramedics in this study worked in rural areas where they balanced conventional paramedicine tasks responding to emergencies with the newly assigned CP-related tasks. CP was officially launched throughout several districts across the province in April 2015, and the level of CP experience varied across the workforce; yet it was generally low with sparse training. However, there were issues with CP that may have contributed to work-related dissatisfaction of paramedics. CP is in its infancy in Ontario, and limited available funding poses challenges for decision makers and stakeholders to improve CP program training and management systems (Russell et al., 2017). A fear of service interruption at wellness clinics and more efficient patient tracking software were issues that paramedics indicated will need improvements in the future.

The results indicated that PCPs were more likely to practice CP compared to ACPs, and that rural paramedics were more likely to practice CP than urban paramedics. However, the vast

majority of PCPs who practiced CP came from rural programs, and EMS providers in rural Northern Ontario typically have lower call volumes that allow more time for paramedics to practice CP compared to their urban counterparts; likely this is what led to the low quantity of ACP responses.

Another potential limitation is the possibility of response bias related to paramedics' preconceived attitudes towards CP. There were a number of paramedics who did not fully complete the survey, and this could have presented a bias in the findings.

Findings in this study indicated that most paramedics who responded to the survey (67.1%, n = 50) who practiced CP were satisfied. This was reflective of previous research which found that paramedic participation in extended roles led to increased job satisfaction because of more time spent with patients (Brydges et al., 2016 ; Mulholland et al., 2009). Conventionally, paramedics treat and operate in an emergency setting where there is often little opportunity to follow-up with patients after they are assessed, treated and then transported to the hospital. CP provides an opportunity for paramedics to follow-up on their patients, develop a professional relationship, and oversee their recovery (Russell et al., 2017).

Paramedics from this study indicated the need for additional training and/or education to assist them in practicing CP. In most of the paramedic services who participated in CP in our study, paramedics received very little training to acquire the additional knowledge and competencies that may be required in CP (i.e., social determinants of health, mental health, additional medication information, etc.), and most CP-related training only occurred for a few hours.

Lack of training was also found to be an important factor with CPs working in rural communities in Renfrew County, Ontario (O'Meara et al., 2016). Specifically, researchers from that study found education in the areas of health promotion and prevention was lacking and needed to be enhanced to create opportunities for paramedics to engage in additional education that would further their clinical skills and expertise, particularly in areas such as health promotion and disease prevention (O'Meara et al., 2016).

Currently in Ontario, paramedicine is highly regulated, however there is no self-regulated college and the CP role and practices are not outlined in the Ambulance Act, the Basic Life Support Patient Care Standards, or the Advanced Life Support Patient Care Standards (Government of Ontario, 2015). The JDCF Framework, as described by Karasek (1979), demonstrates how increased decision latitude in an individual's job duties is more desirable for their well-being. If paramedicine was a self-regulated profession in Ontario, it could provide an increased sense of job control/decision latitude for paramedics (Farnady, 2016). Developing a job identity is still an issue that paramedics encounter, however CP developments may contribute to the development of a paramedic profession (Martin & O'Meara, 2019). A more clearly defined provincial CP framework and practice guidelines may also alleviate some challenges with what is expected of paramedics who participate in CP, and this is also important for ensuring safety standards (O'Meara, Ruest & Stirling, 2014).

This study has several limitations. CP was only initiated in some areas for a few months prior to the survey dissemination, and in these areas paramedics were only able to respond with limited participation and experience with CP-related duties. There was also a low response rate for a few EMS Providers, and only a few paramedics ( $n = 13$ ) who practiced CP in larger urban centres; this makes it difficult to form generalizations regarding urban paramedic opinions

related to CP. Additionally, it is important to note that paramedics labeled as practicing CP were defined as having had exposure to practicing CP, and not necessarily having experience practicing CP full-time. Therefore, some of the paramedics may only have had very limited exposure and experience with CP.

The strength of our study was that it included paramedics from eight EMS providers, providing a broad cross-sectional perspective of CP programs in Northern Ontario from the perspectives of frontline paramedics. Sinha (2012) identified a significant need to invest in the development and sustainability of CP programs to alleviate issues related to access to primary care, and this study provides data to support this assertion. The findings from this study provide formative information to EMS commanders, chiefs, and community health stakeholders related to CP, with particular emphasis on potential areas of improvement to assist in ongoing program implementation and evaluation. There also may be several policy implications which emerge from this study, particularly related to changes in the paramedic scope of practice in Ontario. For example, recently there was a policy change to increase paramedic decision-making to provide patients with alternate care rather than simply limited to direct transportation to hospitals (Government of Ontario, 2017).

## 2.6 Conclusion

This study adds to the growing knowledge base related to CP programs in Northern Ontario. The findings provide a unique perspective from frontline paramedics, and they will inform future CP program developments. CP is still a relatively new approach that has shown promise for improving the health and well-being of patients, and there may be positive effects for paramedics as well. Even though the paramedics in this study had limited exposure to CP, the findings of paramedics who did participate in CP did suggest that the workforce is receptive and

believe that more paramedics should be permitted to practice CP (76.7%, n = 65). Paramedics indicated they enjoyed how CP allowed opportunities to build professional relationships with patients and better promote patient health. However, paramedics practicing CP indicated that there is room for improvement related to improved training, mitigating service interruptions, and implementing patient tracking software. Paramedics indicated that CP helped strengthen their professional relationships with patients and improved patient's health status. This study provided evidence to support recommendations to further support the development of CP programs since the majority of paramedics indicated that they found CP to benefit patients' health and well-being. There is still more research that needs to be conducted to determine best practices of CP programs in other regions across Ontario and Canada. The findings of this study provide paramedic management professionals with information regarding program successes and areas for improvement for CP programming in the future that were unique in a Northern Ontario context.

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## Chapter 3: Community paramedicine and quality of work life

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### 3.1 Abstract

#### **Background**

Paramedics are exposed to multiple stressors in the workplace. They are more likely to develop occupational-related stress conditions compared to other occupations. Quality of work life (QoWL) is an important occupational-related construct because it is influenced by many factors such as operational stress and job satisfaction. There is very little research on paramedic QoWL, especially as it relates to community paramedicine (CP). This study focused on understanding the factors affecting QoWL of paramedics in Northern Ontario, Canada; a particular focus was on understanding the personal and organizational factors, such as practicing CP, which may impact QoWL.

#### **Methods**

Paramedic QoWL was assessed using an online survey that was distributed to approximately 879 paramedics across Northern Ontario. The survey included the *23-Item Work-Related Quality of Work Life Scale*. Data analysis involved linear regressions with nine predictor variables deemed to be related to QoWL for paramedics with QoWL and its six subscales as dependent variables. Multiple linear regressions were used to assess the personal and organizational factors, such as practicing of CP, which predicted QoWL.

#### **Results**

There were 197 paramedics who completed the *23-Item Work-Related Quality of Life Scale*. Overall, the mean QoWL score of all paramedic participants was 73.99, and this was lower than relevant published norms for other occupations. Factors that were most associated

with higher QoWL were, experience practicing CP ( $p < 0.05$ ), number of sick days/year ( $p < 0.01$ ), and higher self-rated mental health ( $p < 0.001$ ).

## **Discussion**

Higher paramedic QoWL appears to be associated with many factors such as number of sick days per year, self-rated mental health, and participation in CP. The relationship between QoWL and CP is an interesting and encouraging finding for paramedics who usually work in a high-stress environment; it may provide emerging evidence that paramedics who practice CP may have more desirable experiences in the workplace. EMS organizations should also consider establishing necessary workplace health promotion strategies that are targeted at improving QoWL for paramedics. This may serve to mitigate the risk of operational stress injury (OSI).

## 3.2 Background

A new community-based model of health care, community paramedicine (CP), was recently introduced throughout Ontario (MOHLTC, 2015). Additionally, CP in Northern Ontario may allow paramedics to practice a higher degree of job control since responsibilities involve proactively practicing health promotion strategies to improve the health and well-being of patients (Russell, Sherman, Prevost, Nixon & Ritchie et al., 2017). CP practice usually involves situations where paramedics provide preventative non-emergency care, in non-ambulatory settings, to frequent users of the dispatch ambulance system. The goal of CP is to reduce unnecessary emergency dispatch calls and hospital emergency department visits, and to assist in addressing health service gaps and provide timely care for patients in need (MOHLTC, 2015). Thus, paramedics who practice CP in Northern Ontario regularly visit patients in their home or meet with several patients at a time during scheduled wellness clinics at convenient locations such as community centres or apartment complexes.

Paramedicine in rural and Northern Ontario, Canada, is different compared to paramedicine in Southern Ontario due to variation in geographic and cultural characteristics. Geographically, Northern Ontario is much larger, more rural, and less populated than Southern Ontario (Russell et al., 2017). According to the Ministry of Health and Long-Term Care (MOHLTC), rural communities are defined as “those with a population of less than 30,000 that are greater than 30 minutes away in travel time from a community with a population of more than 30,000” (MOHLTC, 2010, pg. 8). Due to the expansive geography of Northern Ontario, paramedics in rural areas are often stationed in isolated locations, and they are often required to



travel much longer distances (sometimes hundreds of kilometres) to respond to medical emergencies and then transport patients to hospitals which adds to their job demands.

There are an increasing number of sources that identify the susceptibility of paramedics to occupational-related stress (Regehr & Millar, 2007; MOHLTC, 2015; Paramedic Chiefs of Canada, 2014). Compared to their urban counterparts, factors associated with occupational-related stress of rural paramedics are forced-rural posting, isolation/lack of support, unfavourable work patterns, loss of skill competency, and knowing the patient (Hamilton, Stockhausen, & Grootjans 2010). Also, there are other factors that affect the psychological well-being of paramedics related to their organizational and their personal lives. Hamilton states that “many rural healthcare staff share common stressors that are linked to a lack of social and organisational support, and the need for a better work-life balance” (Hamilton et al., 2010, p.6). Thus, occupational-related stress is also related to the quality of life of paramedics due to increased psychological demands (Van Laar & Easton, 2008). The purpose of this paper is to explore relationships between organizational and personal factors of paramedics in their lives at work.

### 3.2.1 Health of Paramedics at Work

Paramedics experience more injury in the workplace compared to the general working population and other health care professionals (Sterud, Ekeburg & Hem, 2006). Compared to other stressful occupation roles such as police, nurses, and firefighters, paramedics are ranked first regarding the negative impacts their work has on their physical well-being (Regehr & Millar, 2007). They also have the highest post-traumatic stress disorder (PTSD) rates when compared to police and firefighter populations (TEMA Conter, 2017). The literature demonstrates that paramedics experience higher levels of stress compared to other occupations, and this is even more pronounced for rural paramedics (Courtney, Francis & Paxton, 2012;

Hamilton et al., 2010). Cydulka reported that “88.7% of paramedics felt that their job was stressful and felt psychologically worn out after work” (Cydulka, Emerman, Shade, & Kubincanek, 1994, pg. 241).

Workplace stress can be understood as a function of how demanding a person’s job is and how much control (discretion, authority, or decision latitude) the person has over their own responsibilities (Karasek, 1979). There are several physical, mental, intellectual, behavioural, and organizational effects related to high levels of stress. In terms of physical effects, stress has been linked to reduced cognitive function, depressed immune system, increased blood pressure, and increased prevalence of diabetes (McEwen, 1998). High levels of stress have been linked to psychological morbidities (Holmgren, Dahlin-Ivanhoff, Bjorkelund & Hensing, 2009). According to Regehr & Millar (2007), occupational stressors also significantly affect the quality of interpersonal relationships within the family itself (Regehr & Millar, 2007). Some of these stressors are similar to those experienced by other health professionals who have contact with large numbers of patients and members of the public; and who are responsible for a person’s life and well-being (Cydulka, Lyons, Moy, Shay, & Hammer et al., 1989). Additionally, paramedics work in environments that may be dangerous and unfamiliar, such as roadways and accident sites, and they are often judged by bystanders on their job performance (Cydulka et al., 1989).

### 3.2.2 Factors Related to Operational Stress Injury

A white paper released by the Paramedic Chiefs of Canada outlined the status of paramedics regarding operational stress injury (2014). Operational stress injury (OSI) is the “non-medical term used to describe psychological problems resulting from mentally and/or emotionally traumatic circumstances” (Paramedic Chiefs of Canada, 2014, pg. 7). Forms of OSI for paramedics include critical incident stress, anxiety & depression, compassion fatigue, post-

traumatic stress disorder, substance abuse, job burnout, and suicide (Paramedic Chiefs of Canada, 2016). Out of all first responders in Canada, paramedics experience the highest rates of PTSD (25.5%) compared to firefighter (17.3%) and police (7.6%) personnel (TEMA Conter, 2017). According to the Government of Ontario, due to the alarming rates of PTSD associated with paramedics and other first responders, a recent legislation permits paramedics and other first responders to make disability claims due to PTSD caused by the workplace under the *First Responders Act (Post-Traumatic Stress Disorder) 2016, S.O. 2016, c. 4 – Bill 163* (First Responders Act, 2016).

The prevalence of PTSD in the paramedic population is also much higher compared to the general population of Canada. In 2016, there were approximately 25.5% paramedics who suffered PTSD in Canada compared to 9.6% of the national population (TEMA Conter, 2017). In 2016, paramedics also had the highest rates of suicide compared to all first responder personnel in Canada. Compared to the Canadian population, paramedics also have much higher rates of suicides, with 56.7 per 100,000 paramedics committing suicide compared to 17.30 per 100,000 for Canadian males and 5.40 per 100,000 for Canadian females (TEMA Conter, 2017).

In response to this, in April 2017 the Ontario Ministry of Labour (MOL) created a mandatory requirement for all emergency service providers (EMS, fire, and police) to submit PTSD Prevention Plans to the Ministry of Labour (Ministry of Labour, 2017). The purpose of this requirement was not only focused on prevention, but also to ensure first responders had access to resources if they were experiencing PTSD or any other mental illness. Due to high rates of PTSD amongst emergency workers, including paramedics, it is deemed necessary for paramedics to receive appropriate interventions to mitigate poor psychosocial well-being (Cicognani, Pietrantonio, Palestini, & Prati, 2009).

### 3.2.3 Quality of Work Life

Quality of work life (QoWL) is an important construct that is impacted by OSI and PTSD. It has multiple definitions in the literature, however Easton et al. (2013) state that there are several constructs that relate to of QoWL, and they vary according to the theoretical stance of researchers (Easton & Van Laar, 2013). Easton et al. claim that the conceptualisation of QoWL includes stress and psychological well-being at work, but agreement on what else should be included among key concepts has yet to be determined (Easton & Van Laar 2013). Essentially, a higher QoWL is associated with greater happiness and is beneficial for an employee regarding both psychological and physical well-being in an occupational setting (Nowrouzi, Lightfoot, Carter, Lariviere, Rukholm et al., 2015). For the purpose of this study, QoWL was defined as how an occupation is beneficial for the well-being of an individual and how the employee would self-evaluate their occupation (Van Laar, Easton & Edwards, 2007).

The Job-Demand Control Framework [JDCF] (Karasek, 1979), was used as a theoretical framework to inform this study because of the similar constructs that the JDCF and QoWL share. The JDCF contains two main constructs: job demand (stressors) and job control (job duty discretion) which are theoretically similar to the stress at work and control at work constructs within QoWL. This framework was used to provide further insight into the findings related to describing any potential relationships between QoWL and CP since this form of practice presents more opportunity for leniency in job duties compared to conventional paramedicine which theoretically, may relate to stress at work. One relevant study using the JDCF concluded that high-strain jobs have a combination of high psychological demands and low-decision latitude, which leads to psychological and physical stress (Laschinger, 2001). When workers experience

low control in their job, it results in anxiety, fatigue, depression, and physical illness (Laschinger, 2001).

Paramedicine is one of the most susceptible occupations for poor mental health, and there is a gap in research related to understanding the relevant factors related to QoWL for paramedics, especially those practicing in rural areas. This is especially important given the recent introduction of CP in Ontario, representing a change in the responsibilities and operational role for some paramedics. Thus, this exploratory study was designed to investigate the factors related to QoWL of paramedics in Northern Ontario and addressed the following research questions:

1. What personal and organizational factors affect the QoWL of paramedics in Northern Ontario?
2. Does experience practicing CP affect paramedic QoWL?

### 3.3 Methods

This was a study using self-report methods of paramedics working in Northern Ontario designed to determine which personal and organizational factors were associated with QoWL, including experience practicing CP. Data was collected using an online survey instrument that was developed by researchers from the Centre for Rural and Northern Health Research at Laurentian University. The survey was developed to assess paramedic QoWL and to evaluate pilot CP programs from the perspective of paramedics. Thus, a sub-set of the survey data, related to paramedic QoWL, was used for this study; the remaining data related to the CP evaluation will be reported elsewhere.

### 3.3.1 Setting and Population

The region for this study included several geographically large rural and urban regions in Northeast and Northwest Ontario, Canada that contain paramedic services coordinated through municipalities and/or District Service Boards (DSB's). The majority of Northern Ontario contains regions where population density is low and where many small communities are located several hundred kilometers away from the nearest hospitals (Russell et al., 2017). These DSB's are service management organizations created by the provincial government to oversee and coordinate a host of municipal managed programs such as social services (i.e. social housing, children's services, and Ontario Works) and emergency medical services (EMSs), for geographically larger rural regions. The participants in this study consisted of primary care paramedics (PCPs) and advanced care paramedics (ACPs) working for eight EMS providers: Manitoulin-Sudbury Paramedic Service, Cochrane District EMS, Superior North EMS, Rainy River EMS, Sudbury Paramedic Service, Parry Sound EMS, Northwest EMS and Algoma EMS. The majority of these services provide pre-hospital emergency care in geographically large districts compared to more urban EMS providers in Southern Ontario. However, Superior North EMS, Cochrane District EMS, and Sudbury Paramedic Services also service urban centres with higher populations, higher call volumes, and shorter transport distances to local hospitals within each city. The majority of the other communities within the service areas of these EMS providers are rural and are dispersed across Northeastern and Northwestern Ontario.

The CP programs in six of the eight Northern districts involved in this study are relatively unique in that CP is practiced with on-duty paramedics; only the City of Greater Sudbury EMS and Superior North EMS use dedicated paramedics practicing CP. Figure 2 in Chapter 2 contains a map of the service areas for the eight participating EMS providers.

### 3.3.2 Data Collection

The data for this study was collected using an online survey instrument available to paramedics employed in eight EMS districts. The survey collected demographic information, attitudinal perspectives, and responses to the 23-item Work-Related Quality of Life or WRQoL scale (Easton & Van Laar, 2012). There were 104 separate items/questions involving both multiple choice and open-ended questions. The survey was available to the paramedics via an online link to the REDCap (Research Electronic Data Capture) software, a secure web-based application designed to support data capture for research studies (Harris, Taylor, Thielke, Payne, Gonzalez, et al., 2009). Data was stored on a secure server at Laurentian University. The items in the survey were developed by members of the research team and modified from original items provided by the Ministry of Health and Long-Term Care for use in the evaluation of pilot CP programs in the province. A modified approach to Dillman's Mail and Internet Design method was used to maximize response rate and minimize respondent bias (Dillman, Smyth, & Christian 2009). Participation by paramedics was voluntary, anonymous, and initiated by an e-mail invitation from the research team containing a link to the online survey. The email was then forwarded to paramedics employed by the eight EMS providers by either the EMS Chief or a Commander. Two reminder e-mails were sent. The entire data collection period occurred between November 2016 and February 2017. Ethical approval was obtained from the Laurentian University Research Ethics Board on October 28<sup>th</sup>, 2016 (REB #:6009514).

### 3.3.3 Survey Instrument and Scale Characteristics

The following descriptive data were collected on the survey: age, hours worked per week, language of services offered, education level, sex, years of service, employment status (full-time or part-time), rural (population < 30,000) vs. urban (population > 30,000) work status, self-

perceived physical health, EMS provider/district, LHIN geographical area (Northeast or Northwest regions of Northern Ontario) number of sick days/year, certification level, and whether or not they participated in a CP program in their district.

The scale used to measure QoWL, was the 23-Item Work-related Quality of Life (WRQoL) scale developed by Van Laar, Edwards, and Easton (2007). The WRQoL was deemed most appropriate because it is a holistic measure of the degree of work-related stress that may affect a person's psychological well-being, and it was used with measuring QoWL of nurses (Nowrouzi et al., 2015), and police officers (Easton, 2013). The WRQoL contains six factors, or sub-scales, that measure components of work-related quality of work life that used the United Kingdom National Health Service for reference norms (Van Laar, Edwards & Easton, 2007):

1. Career and Job Satisfaction (JCS): Measures overall satisfaction experienced with the participant's job. Scale norm = 6 (min) to 36 (max).
2. Working Conditions (WCS): Measures items specific to the physical working environment and the accessibility and availability of necessary equipment. Scale norm = 3 (min) to 15 (max).
3. General Well-Being (GWB): Measures important factors of physical and psychological well-being (e.g. happiness) of the participant. Scale norm= 6 (min) to 30 (max).
4. Home-Work Interface (HWI): Measures how well the participant's organization respects and assists them with respect to their work and home life balance. Scale norm = 3 (min) to 15 (max).
5. Stress at Work (SAW): Measures the work-related demands/stressors experienced by the participant in terms of whether they were stressful or acceptable. Higher



SAW scores indicate lower levels of stress as this item was reverse-coded. Scale norm = 2 (min) to 10 (max).

6. Control at Work (CAW): Measures the degree to which the participant has the ability to contribute to decision-making in the workplace. Scale norm = 3 (min) to 15 (max).

The WRQoL uses a 5-point Likert scale that has the following response categories: strongly disagree = 1, disagree = 2, neutral = 3, agree = 4, and strongly agree = 5. The summary scores from each individual survey were calculated as the mean between the ranges of 1.00 to 5.00 for an overall mean summary score for WRQoL and mean scores for each of the six factors. The maximum score of the WRQoL is 115 (Van Laar & Easton, 2008). This scale has demonstrated strong psychometric properties with an overall Cronbach's alpha score of  $\alpha = 0.91$  (Easton & Edwards, 2012), and it has been validated with the following psychometric scales: GHQ-12 General Health Questionnaire (Goldberg, 1978), Warr Job Satisfaction Scale (Warr, Cook & Wall, 1979), Warr Job Related Well-being Anxiety-Contentment Scale, Work Locus of Control (Spector, 1988), GSES Generalised Self-Efficacy Scale (Schwarzer & Jerusalem, 1995), and the TMMS Emotional Intelligence Scale (Salovey, Mayer, Goldman, Turvey & Palfai, 1995). The reference group for interpreting the results of the scale was from the United Kingdom National Health Service employees who were employed at United Kingdom hospitals and primary care centres.

### 3.3.4 Data Analyses

The data analyses were performed using IBM SPSS (IBM Corp, 2011). Descriptive statistics were obtained for demographic data. Closed-ended responses from the WRQoL from the survey were coded between 1 (low) and 5 (high). Overall QoWL and six sub-scale mean

scores were calculated. There were seven multiple linear regressions that were performed using personal and organizational independent variables (sex, physical health, mental health, years employed, sick days/year, full-time status, CP experience, EMS provider worked for, and rural work location) as predictors of QoWL and the six subscales (JCS, WCS, GWB, HWI, SAW, and CAW) as dependent variables. The following demographic characteristics were used as independent variables and coded as the following:

**Personal Factors:**

**Sex:** Male (= 0) or female (=1).

**General Health:** Self-rated status of paramedic physical health/well-being (from 1= strongly disagree to 5= strongly agree).

**Mental Health:** Self-rated status of paramedics mental health/well-being (from 1 = strongly disagree to 5 = strongly agree).

**Years Employed:** The number of years the participant has been employed as a PCP, ACP, or CCP (1= 0 to 9.9 years, 2 = 10 to 19 years, 3 = 20 to 29 years, 4 = 30+ years).

**Sick days/year:** Number of sick days the participant has been absent from work due to injury/illness in the past 12 months of survey distribution (1 = no sick days, 2 = 1 to 5 sick days, 3 = 6 to 10 sick days, 4 = 11 to 15 sick days, 5 = more than 15 sick days).

**Organizational Factors:**

**Full-time:** The employment status of the paramedic at their respective employer (1= full-time or 0 = part-time).

**CP Experience:** Self-rated measure on the degree of participation/experience in a CP problem for their respective EMS provider (1 = CP experience and 0 = no CP experience).

**EMS Service Worked for:** One of eight potential EMS providers where the paramedic was employed that had a formal CP pilot program (0 = No, 1 = Yes).

**Rural:** Primary population size of the region and/or municipality where the paramedic spends most of their hours worked. Rural defined by a population of 29,999 or more and urban defined by a population of 30,000 or more (0 = urban and 1 = rural).

Due to the explorative nature of this QoWL study, a less conservative alpha level of 0.1 was used to detect statistically significant relationships in the data (Schumm, Pratt, Hartenstein, Jenkins & Johnson, 2013). Missing data points were addressed for three records where subscale means were imputed for the missing values (Dodeen, 2013).

All of the independent variables (personal and organizational factors) were used as predictive factors in seven independent multiple linear regressions with QoWL summary scores and the six subscale summary scores as separate dependent variables to determine if there were any relationships. The independent  $R^2$  coefficient indicated the proportion of variance explained by the linear regression models. Beta values and standard error of the mean values were reported for the independent multiple linear regression results.

### 3.4 Results

Out of the 879 paramedics who were eligible to complete the survey, there were 197 who completed the WRQoL, yielding a response rate of 22.0%. The mean age of the sample was 38.1 years (SD = 11.85), 71.6% (n = 140) were male, and the average years employed was 12.6 (SD = 9.71). Of the 197 paramedics who completed the WRQoL, there were (70.7%) (n = 139) of the paramedic survey population employed full-time and 29.3% (n = 58) employed part-time/casual or on modified duty. There were 43.7% (n = 86) of paramedics who practiced CP. Descriptive characteristics of the sample are summarized in Table 5.

**Table 5: Characteristics of Paramedic Participants**

<b>Category</b>	<b>% Total (n=197)</b>
<b>Sex</b>	
Male	71.6 (140)
Female	28.4 (57)
<b>Age</b>	
20-35	47.0 (93)
36-50	35.2 (69)
51-65	17.8 (35)
<b>Certification</b>	
Primary care paramedic	85.3 (168)
Advanced care paramedic	14.7 (29)
<b>Years Employed</b>	
0-9.9 years	46.5 (92)
10.0-19 years	27.0 (53)
20-29 years	16.2 (32)
30 + years	10.3 (20)
<b>Employment Status</b>	
Full-time	70.7 (139)
Part-time/Casual/Modified Duty	29.3 (58)
<b>LHIN Geographical Area</b>	
Northeast	65.4 (129)
Northwest	34.6 (68)
<b>Work Location</b>	
Rural	54.4 (107)
Urban	45.6 (90)
<b>CP Experience</b>	
Yes	43.7 (86)
No	56.3 (111)
<b>Sick Days/Year</b>	
None	28.9 (57)
1 to 5	42.1 (83)
6 to 10	15.7 (31)
11 to 15	3.6 (7)
Over 15	9.7 (19)
<b>Self-Rated Mental Health</b>	
Good/Excellent	40.1 (79)
<b>Self-Rated Physical Health</b>	
Good/Excellent	47.7 (94)

There were 168 (85.3%) primary care paramedics and 14.7% (n = 29) advanced care paramedics who completed the survey. The majority of the paramedics worked in rural locations

with 54.4% (n = 107), and in Northeast Ontario there were 65.4% (n = 129) paramedics. In addition, in terms of self-reported mental health, 17.7% (n = 35) of paramedics indicated poor/very poor mental health and 40.1% (n = 79) indicated good/excellent mental health.

### 3.4.1 Overall Paramedic QoWL Results

The mean subscale scores and overall QoWL scores are portrayed in Table 6 with descriptive category referencing scale norms. Normality assumptions were met using the Shapiro-Wilk test. Co-linearity testing for independent variables was conducted using variance inflation factors. The overall mean QoWL score was 73.99 based on 197 responses, and this was considered average compared to United Kingdom National Health Service scale norms (scale minimum = 15; scale maximum 115) .

**Table 6: 23-Item WRQoL Scale and Sub-scale Paramedic Means**

<b>Subscale</b>	<b>Mean Score (Norm Category)</b>	<b>Norm Ranges</b>	<b>Standard Deviation</b>
<b>GWB</b>	21.62 (Average)	6-30	4.38
<b>HWI</b>	8.52 (Lower)	3-15	2.45
<b>JCS</b>	19.45 (Lower)	6-36	3.87
<b>CAW</b>	8.80 (Lower)	3-15	2.89
<b>WCS</b>	9.89 (Lower)	3-15	2.52
<b>SAW</b>	5.39 (Average)	2-10	1.96
<b>Overall QoWL</b>	73.99 (Average)	1-115	12.94

Categories: In reference to UK National Health Service norms

A statistically significant linear regression model was observed with the QoWL scale ( $R^2 = 0.183$ ,  $p < 0.001$ ). Self-perceived mental health ( $b = 0.145$ ,  $p = 0.002$ ), number of sick days per year ( $b = -0.137$ ,  $p < 0.001$ ), and participation in a community paramedicine program ( $b = 0.180$ ,  $p = 0.048$ ) were statistically significantly associated with improved QoWL.

### 3.4.2 Paramedic Sub-Scale Results

Statistically significant linear regression models were also observed with the general well-being sub-scale ( $R^2 = 0.139$ ,  $p = 0.01$ ), job-career satisfaction sub-scale ( $R^2 = 0.145$ ,  $p = 0.01$ ), working conditions sub-scale ( $R^2 = 0.163$ ,  $p < 0.001$ ). The SAW ( $R^2 = 0.115$ ,  $p = 0.07$ ) and CAW ( $R^2 = 0.086$ ,  $p < 0.10$ ) were also statistically significant linear regression models.

The results of the multiple linear regression analyses appear in Table 7. Paramedic sex was a statistically significant predictor for the job-career satisfaction subscale ( $b = 0.245$ ,  $p = 0.016$ ); female paramedics were shown to have higher job/career satisfaction scores than male paramedics in Northern Ontario. Self-perceived mental health was a statistically significant predictor of general well-being ( $b = 0.161$ ,  $p = 0.008$ ), working conditions ( $b = 0.140$ ,  $p = 0.004$ ), stress at work ( $b = 0.205$ ,  $p = 0.013$ ), and control at work ( $b = 0.198$ ,  $p = 0.086$ ). Years employed as a paramedic was a significant predictor of stress at work; lower years employed as a paramedic resulted in higher stress at work scores ( $b = -0.018$ ,  $p = 0.013$ ).

Number of sick days per year was a significant predictor of lower general well-being ( $b = -0.167$ ,  $p < 0.001$ ), home-work interface ( $b = -0.105$ ,  $p = 0.047$ ), control at work ( $b = -0.152$ ,  $p = 0.013$ ), and working conditions ( $b = -0.201$ ,  $p < 0.001$ ). The results demonstrated that paramedics who had a lower number of sick days per year tended to have higher quality of work life, general well-being, work-life balance, control at work, and experienced better working conditions.

Participation in a CP program was statistically significant as a predictor of job satisfaction ( $b = 0.184$ ,  $p = 0.076$ ), and control at work ( $b = 0.291$ ,  $p = 0.067$ ). It was also

observed rural practice location was a significant predictor of stress at work ( $b = 0.306$ ,  $p = 0.044$ ) which indicates that rural paramedics were at a higher risk of job stress.

**Table 7: Independent Multiple Linear Regression Results for Paramedic QoWL & Subscales**

		<b>Overall QoWL <math>\beta</math> (std. error)</b>	<b>GWB <math>\beta</math> (std. error)</b>	<b>HWI <math>\beta</math> (std. error)</b>	<b>JCS <math>\beta</math> (std. error)</b>	<b>CAW <math>\beta</math> (std. error)</b>	<b>WCS <math>\beta</math> (std. error)</b>	<b>SAW <math>\beta</math> (std. error)</b>
	<b>Independent Model R<sup>2</sup></b>	<b>0.183***</b>	<b>0.139***</b>	0.067	<b>0.145***</b>	<b>0.086*</b>	<b>0.163***</b>	<b>0.115**</b>
<b>Personal Factors</b>	Sex	0.102 (0.089)	0.087 (0.114)	0.071 (0.133)	<b>0.245** (0.101)</b>	0.119 (0.155)	0.160 (0.131)	-0.069 (0.156)
	Physical Health	-0.053 (0.053)	-0.076 (0.069)	-0.041 (0.080)	-0.030 (0.061)	-0.035 (0.093)	-0.094 (0.079)	-0.041 (0.094)
	Mental Health	<b>0.145*** (0.046)</b>	<b>0.161*** (0.060)</b>	0.105 0.069	0.064 (0.053)	<b>0.140* (0.081)</b>	<b>0.198*** (0.068)</b>	<b>0.205** (0.081)</b>
	Years Employed	0.002 (0.005)	-0.001 (0.006)	0.011 (0.007)	0.008 (0.005)	0.010 (0.008)	0.003 (0.007)	<b>-0.018** (0.008)</b>
	Sick days/year	<b>-0.137*** (0.035)</b>	<b>-0.167*** (0.045)</b>	<b>-0.105** (0.052)</b>	- 0.142 (0.040)	<b>-0.152** (0.061)</b>	<b>-0.201*** (0.052)</b>	- 0.056 (0.061)
<b>Organiza tional Factors</b>	Full-Time	- 0.013 (0.071)	-0.063 (0.091)	-0.057 (0.106)	0.061 (0.081)	0.004 (0.123)	0.007 (0.104)	-0.027 (0.124)
	Yes CP Experience	<b>0.180** (0.091)</b>	0.139 (0.117)	0.215 (0.136)	<b>0.184* (0.103)</b>	<b>0.291* (0.158)</b>	0.085 (0.134)	0.168 (0.159)
	EMS Service Worked For	0.004 (0.021)	0.010 (0.026)	0.005 (0.031)	0.003 (0.023)	0.031 (0.036)	-0.018 (0.030)	-0.005 (0.036)
	Rural	0.072 (0.086)	(0.076) (0.110)	-0.040 (0.129)	0.063 (0.098)	-0.127 (0.395)	0.152 (0.126)	<b>0.306** (0.151)</b>

Note: (\* $p < 0.10$ , \*\* $p < 0.05$ , \*\*\* $p < 0.01$ )

$B$  = standardized beta coefficient

std. error = standard error

### 3.5 Discussion

Self-reported mental health, decreased number of sick days per year and participation in a CP program were found to be associated with higher overall quality of work life. Interestingly, higher self-rated mental health was a statistically significant predictor of higher overall QoWL, whereas self-rated physical health was not found to be a significant predictor of QoWL or its subscales. Physical health is an important aspect of paramedicine due to the physical demands such as lifting patients, performing CPR, operating an ambulance, shift-work, and standing/moving for long periods of time. Due to the physical nature of paramedicine (e.g. lifting patients), it was expected that self-rated physical health might predict overall QoWL which was not evident in this study. Previous research has found that a higher self-rated physical health was associated with higher psychological well-being (Chapman, Blau, Pred & Lopez, 2009; Holmgren et al., 2009). An explanation of this finding may include due to lower call volumes in rural areas, physical demands may be typically lower.

The results indicated that self-reported mental health was a significant predictor of overall QoWL, and general well-being, control at work, working conditions, and stress at work sub-scale scores. Self-reported mental health is an important indicator of overall mental well-being (Levinson & Caplan, 2014), and not surprisingly, this was positively associated with QoWL for paramedics in our study. Self-reported mental health was used as a factor in this study because previous literature has demonstrated self-perceived mental health to be a good indicator of overall health (Levinson et al., 2014).

Findings from this study suggest that participation in CP may positively impact QoWL. This is similar to previous research demonstrating that participation in a community-based program similar to CP improved job satisfaction (Reeve, Pashen, Mumme, De La Rue &



Cheffins, 2008). Perhaps paramedics practicing CP may indeed have an increased QoWL due to the increased control at work that is characteristic of CP-type responsibilities. Control at work is an important factor that mitigates job strain (Karasek, 1979).

The JDCF Framework contains two important factors, job demand (stress) and job control. Similarly, the WRQoL scale contains a stress at work and control at work subscale. In regards to job control/CAW subscale, the number of sick days paramedics had in one year was a statistically significant predictor of job control. In regards to the stress at work subscale, self-perceived mental health, years employed, and rural work locations were statistically significant predictors of job demands. In reference to the theoretical framework for the study, it was expected that paramedics who practiced CP would have higher control at work and less stress at work due to the low-stress environment associated with CP (Karasek, 1979). The results did show that paramedics who were participating in CP demonstrated a higher overall quality of work life and job satisfaction; and they were individually more able to exercise job autonomy in the workplace as indicated by the control at work subscale. Since paramedics who participated in CP was associated with higher QoWL scores, CP implementation may be a relevant operational stress mitigation strategy for on-duty paramedics in other rural contexts with lower call volumes. Future research should explore this assertion further since it has substantive positive implications for the evolving practice of paramedicine and CP in Ontario.

Another factor that can affect operational stress and psychological well-being at work was years of service or job tenure. Job tenure has been positively correlated with improved mental health in first responders, including paramedics (Brough, 2005). The results from Brough's study demonstrated that lower years employed predicted lower levels of stress; these findings were reflected with the higher stress at work scale scores in this study which indicated lower stress of

paramedics with lower years in service. However, other research demonstrated that job tenure is not a significant predictor of psychological well-being at work (Iwu, 2013). Job tenure may contribute to higher levels of psychological well-being at work, and the reason for this may be due to the finding that those who work in EMS for longer periods of time can develop higher levels of resilience to stressful situations (Gayton & Lovell, 2012). Resiliency is strongly correlated with general well-being and with general health in paramedics (Gayton & Lovell 2012). Resiliency is likely an important factor of psychological well-being since it helps a person adapt to stressful situations which may be otherwise detrimental to a person's physical, mental, social, and family health (Van der Ploeg & Kleber, 2003).

Previous literature demonstrated that rural paramedics experience higher occupational related stress, and that this was also related to higher rates of mental health disorders compared to their urban counterparts (Courtney et al., 2012). There has been very little research conducted regarding rural paramedics and their mental health and well-being, however Courtney et al. (2012) found that it is lower compared to urban paramedics. Paramedics from this study who worked in rural areas also had higher stress at work scores indicating they actually experienced lower stress at work which is a more desirable outcome for well-being. One contributing factor to this could be the difference in call volumes between the rural and urban centres. Compared to urban paramedics, rural paramedics experience lower levels of physical activity and exhibit higher levels of chronic fatigue, depression, anxiety and stress (Courtney et al., 2012). According to Courtney et al. (2012), this can be attributed to limited education, social isolation, and lack of social support. Hamilton (2010) identified other sources of occupational stress experienced by rural paramedics such as forced rural posting, isolation/lack of clinical support, difficult work

patterns, loss of skills, and personally knowing their patients. It is unknown from the literature how paramedic work-life balance relates to mental health (Courtney et al., 2012).

Employment status (part-time vs. full-time) was not a significant predictor of QoWL scale or the subscales in our study. Previous research shows psychological well-being may differ regarding employment status (e.g. full-time and part-time employees), although the evidence is also conflicting (Patterson, Huang, Fairbanks, Simeone, Weaver, et al., 2010). Regarding teamwork, positive climate, perceptions of management, and working conditions, part-time paramedics scored higher than full-time paramedics in these areas of psychological well-being at work (Patterson et al., 2010). In a related health profession involving shift work, there was no difference in psychological well-being between full-time and part-time in a cohort of emergency nurses, (Adriaenssens, De Gucht & Maes, 2014).

Traditionally, first responder occupations such as paramedicine, police, and fire fighting have been male dominant; however there is a lack of consistency in the evidence for differences by sex related to psychological well-being at work and work-related stress. Some research has demonstrated that females have higher levels of operational stress amongst first responders (Haarr & Morash, 1999). Haarr et al. (1999) suggested that there were higher rates of operational stress experienced by female first responders due to increased harassment & discrimination, over-hostility, and negative public interactions on the job. The results from this study indicated sex to be a significant predictor of job/career satisfaction sub-scale; female paramedics had higher scores for job satisfaction.

Another significant predictor variable in our study, the number of sick days that a paramedic was away from work, was negatively associated with general well-being, home-work

interface, control at work and working conditions scales (see Table 7). Intuitively this finding is not surprising, given that sickness would be expected to lead to lower QoWL. It has been reported that health workers on shift-work experience more sick days per year and have a lower health status compared to those who work regular day hours (Burch, Tom, Zhai, Criswell, Leo et al., 2009). Burch et al., (2009) reported that this is likely due to a change in lifestyle that impacts sleep, time spent with family, and hobbies. Although, shift work was not a variable in our study, it may be a mediating variable that helps explain why higher reported sick days were associated with lower QoWL when compared to other non-emergency occupations.

There were several subscales such as home-work interface, job/career satisfaction, control at work and working conditions where paramedics scored lower than average compared to the reference group as detailed by Easton and Van Laar (2012). The reference group was from the United Kingdom National Health Service employees who were employed at United Kingdom hospitals and primary care centres. In other words, this suggests that many of the paramedics in our study had lower than average work-life relationships, job/career satisfaction, control at work, and perceived working conditions compared to this reference group. According to Easton & Van Laar (2012), these lower scores could be detrimental to their overall health. Regarding working conditions and control at work, the theoretical framework (JCDF) for this study outlined that those employees that have little control at work experience adverse health effects due to the lack of inability to make their own decisions (Karasek, 1979). Lower job satisfaction and working condition scores could be related to detrimental physical and mental health effects (Karasek, 1979).

The scales that scored in the average reference category were general well-being, stress at work, and overall QoWL. Easton and Van Laar (2012) suggest that those employees who score

in the average category do not receive positive benefits nor negative benefits from their work, however positive workplace changes are still needed to be made to improve their QoWL. It is important to note that CP activities are often planned and implemented by paramedics themselves, and this may be the aspect of job control that helps explain the higher QoWL experienced by the paramedics practicing CP in our study. It is also important to note that some CP programs in Northern Ontario are unique compared to other CP programs because many of these rural paramedics practice CP in addition to their regular emergency response duties when they are between emergency calls (Russell et al., 2017). This is feasible due to lower call volumes; this rural practice was the context for over half of the respondents in our study (54.4%). Other paramedic services, in urban areas with higher call volume, have dedicated paramedics performing only CP duties. The study by Regehr and Millar (2007) found that paramedics practicing in this type of urban context had high job demand and low job control.

The findings related to the association between higher QoWL for those paramedics practicing CP suggest that the JDCF may relate to paramedic overall QoWL because it helps explain how work-related stress may be alleviated if paramedics have higher control in their daily duties and more opportunities to engage in their decision-making which would lead to a more *active job*. Practicing CP presents opportunities for paramedics to utilize their decision-making capabilities to a higher degree since they are not following specific guidelines outlined in the *Ambulance Act, 1990 R.S.O.1990, c. A.19* (Ambulance Act, 1990). While performing CP duties, paramedics decide which health promotion and/or clinical duties they feel are necessary, such as blood pressure measuring, medication reconciliation, or providing lifestyle advice.

CP may impact overall QoWL of paramedics who experience lower call volumes since this increases job demands but also increases job control leading to a more desirable work

environment (Karasek, 1979). The JDCF also suggests that employees who have high job demands and low control experience a higher job strain and this has negative health effects (Karasek, 1979). Since paramedics not practicing CP only respond to medical emergencies, they are only exposed to high-stress environments such as death of children, medical emergencies (cardiac arrests), severe motor vehicle collisions, acts of violence, suicide, organizational issues, lack of job autonomy, physical strain, and lack of supervisor support (Van Der Ploeg, 2003). Typically, call volumes at EMS bases in Northern Ontario are lower compared to those in Southern Ontario. EMS providers who have CP programs may be providing a more active and diverse job role in which paramedics provide proactive health education and other health promotion advice for patients in an environment that may be less stressful than a medical emergency. It also provides an environment where paramedics can exercise greater job autonomy since they can practice other skills, such as providing medication reconciliation advice, compared to treating patients who are in a medical emergency.

### 3.5.1 Limitations

There are a few limitations when interpreting the results of our study. The independent regression models were only able to explain a certain degree of the variance in QoWL and its subscales. Thus, there were likely other important factors related to QoWL that were not considered in this study. However, this was an exploratory study that was designed to identify associations between QoWL and several personal and organizational factors. The QoWL scale used in this study was a holistic measure of workers' well-being through several constructs (general well-being, home-work interface, job-career satisfaction, control at work, working conditions, and stress at work). There are several psychological constructs that could be used to predict relationships with well-being and work-related factors. Several of the predictor variables

demonstrated statistically significant effects with QoWL and its subscales. Thus, future studies with similar designs are required to explore these and other factors, in order to better understand paramedic QoWL.

There are many well-being constructs that can be measured with employees and only specific aspects were measured in this study with the QoWL scale used. For example, other aspects of well-being that were not specifically measured in the WRQoL scale that could have been measured were: poor communication, insufficient salaries, lack of social support, physical strains, intent to leave, attrition, and resilience (Gayton et al., 2012 & Chapman, 2009).

The survey was only made available via a web-based link and this may not have been the desired mode of completion for some of the participants which may have contributed to a lower response rate. Two issues that may arise from using web-based surveys are poor internet service and the fear of spam (Fan & Yan, 2010). Due to the rural location of many of the EMS bases, poor internet service could have been a possibility for some paramedics, and this may have prevented them from participating.

Additionally, it is important to note the potential of response bias due to the personality types of the sample. Past research has demonstrated that those who possess higher emotional stability are more likely to complete web-based questionnaires than those with lower emotional stability (Fan & Yan 2010 ; Galesic & Bosnjak, 2006). Therefore, it is possible that the paramedics who fully responded to the online survey could have possessed a higher QoWL compared to those paramedics who did not complete the survey.

It is also important to note that at the time of survey distribution, CP was a relatively new program where paramedics may have had little experience practicing CP at the time. If this study

was to be replicated several years in the future, the CP-related QoWL results could be different than the results that were presented in our study.

### 3.5.2 Implications

Measuring QoWL is important since it provides a measure of an employee's well-being from their experiences in the workplace. In Canada, the economic cost of mental illness is approximately 51 billion dollars, and it is the leading cause of disability in Canada (Canadian Association of Mental Health, 2012). Thus, it is likely that these costs can be reduced if more efforts are focused on preventing workplace mental illness. From an organizational standpoint, leaders and managers have an obligation to ensure the workplace does not have detrimental psychological effects on their employees (Easton & Van Laar, 2013). Findings from our study are important for EMS providers so they can design and invest in workplace wellness programs that may improve the QoWL of paramedics and also generate cost savings related to prevention of mental illness.

The findings from this study provided some insight into the working lives of paramedics practicing across Northern Ontario. This is valuable information that can be used by EMS management to gain insight into their employees' perceived QoWL. They can use this information to design, implement or improve workplace wellness programs to enhance paramedic QoWL and perhaps reduce the number of sick days experienced by the workforce. These initiatives could include improving employee assistance programs, enhancing medical benefits, implementing health and wellness programs, and initiating stress reduction programs. There is also a possibility to include more stress management wellness-related curriculum in paramedic college training programs. It is important for workplaces to offer health and wellness



initiatives/supports to address the impact of both critical incident stress and chronic occupational stress (Donnelly, Bradford, Mellow, Hedges, & Morassutti, 2013).

Another important implication of this study is that it is one of the first studies to compare QoWL of paramedics who have participated in a CP program with paramedics who have not participated in a CP program. CP is still a relatively new program in Ontario, and with that comes a compelling need to understand how it is received and perceived by frontline paramedics. The results from our study indicated that there may be a correlation with paramedics who participated in CP and higher QoWL. Though this is not a causal relationship, it is certainly very suggestive that CP is positively received by the paramedics from Northern Ontario. Interestingly, practicing CP may both improve the health and well-being of paramedics and that of the patients that the CP program was designed to help. This information is important for EMS providers and for the administrative bodies who are responsible for CP operations to aid in decision-making related to the provision of future services, expansion, and sustainability.

### 3.6 Conclusion

This study has demonstrated that the QoWL, general well-being, and stress at work of paramedics practicing in Northern Ontario is average compared to established norms from a sample of health professionals in the United Kingdom. The findings of this study also demonstrated that paramedics in this Northern Ontario sample experience low home-work interface, job/career satisfaction, control at work, and working conditions. In addition, this study has highlighted some of the personal and organizational factors that affect QoWL. One of the striking findings in this study is how participation in CP may improve QoWL. Therefore, encouraging more paramedics to participate in CP may result in improved QoWL for paramedics from other jurisdictions across Ontario. Additionally, ensuring paramedic employers are aware

of the personal and organizational factors that affect QoWL, may be an initial step in helping to mitigate occupational stress.

Improving working conditions and ensuring employers provide their paramedics with adequate resources for mental health support are important. There may be a need to implement additional or enhanced workplace mental health support initiatives to help improve the psychological well-being of paramedics. To the best of our knowledge, this is the first study to examine paramedic QoWL in Northern Ontario. Further research is needed to better understand QoWL and the association between QoWL and CP in other paramedic populations in Ontario and beyond.

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## Chapter 4: Discussion

This thesis outlined the experiences of paramedics in Northern Ontario with respect to their perspectives on practicing community paramedicine (CP) and their quality of work life (QoWL). This work is timely, given: (1) the relatively recent introduction of CP practice in Ontario (Government of Ontario, 2017), and (2) the importance of understanding the nature workplace mental health in paramedic populations (Paramedic Chiefs of Canada, 2014). Both papers included in this thesis (chapter two and three) contained several important findings that are relevant to the evolving occupation of paramedicine. In particular, the majority of paramedics in our sample were supportive of CP and there is a statistically significant association between practicing CP and a higher self-reported QoWL.

In chapter two (Paper 1), paramedic perspectives and opinions related to CP were examined. The results indicated that the majority of paramedics who responded to the survey (67.1%) were supportive of expanding CP across all participating EMS services. However, paramedics also identified some program-specific opportunities for improvement such as: managing service interruptions, improving patient documentation systems, and providing more relevant CP-related training. Paramedics indicated that they enjoyed the increased time spent with patients, and they seemed to enjoy engaging with patients through health promotion and education activities during community paramedicine visits and wellness clinics.

In chapter three (Paper 2), the QoWL of paramedics practicing in rural and urban centres in several districts throughout Northern Ontario was examined. The overall QoWL, general well-being and stress at work scores of paramedics was considered average when compared to

norms from the WRQoL whereas the home-work interface, job/career satisfaction, control at work and working conditions scores were lower when compared to the WRQoL norms (Easton & Van Laar, 2013). This was likely due to the stressful nature of paramedicine. The findings from chapter 3 demonstrated statistically significant relationships between higher QoWL of paramedics who practiced CP and who had lower numbers of sick days per year.

Paramedic well-being affects not only themselves, but also the patients they provide care for. Mental health complaints, physical health complaints, burnout, attrition, sick leave, disability, and fatigue are associated with impaired performance that may hinder patient safety (Patterson et al., 2014). Workplace injuries (including psychological), disability, sick-time, and work-related stress not only present financial strain to an organization, but they also hinder teamwork efficiency leading to increased chance of error (Sikorsky, 2009). High levels of work-related stress with paramedics have been correlated with negative patient attitudes; however, there may be an optimal level of stress that may lead to increased patient safety (Hammer, Mathews, Lyons & Johnson, 1986).

The Job Demand Control Framework (JD-CF) used in this study suggests that there is an optimal level of job demands (stress) that are required for workers' to have a more desired "active job" (Karasek, 1979). Essentially, jobs that have low demand and low control are also jobs that are not desired; and this has important implications for patient safety. A recent study demonstrated that paramedics who experienced low levels of work demands, reported high rates of critical error (Hall, Johnson, Watt, Tsipa & O'Connor, 2016).

## 4.1 Rural vs. Urban Paramedics

Due to the large geographical area that the Northern Ontario Paramedic Survey was administered to, chapter two and three reflected interesting findings in relation to rural and urban practice locations. In Northern Ontario, there are paramedics who are stationed in urban centres in communities with populations as large as 161,000 people and in rural communities with populations as small as a few hundred people (Green , Gozdyra, Frymire, & Glazier, 2017). Therefore, it is not surprising that call volumes are usually much higher in urban centres compared to rural locations (Auditor General, 2013). Rural paramedics also experience much longer transport times compared to urban paramedics (MOHLTC, 2017). Previous research that studied urban and rural paramedics indicated that paramedics who practice in more rural areas experience higher levels of occupational stress (Courtney et al., 2012).

It has been suggested that CP practiced by rural paramedics is substantively different than how it is practiced by urban paramedics. It was evident in chapter two that urban paramedics were more accepting of CP than rural paramedics. However, this could be because CP practice in urban areas was performed by dedicated paramedics rather than regular duty paramedics. Due to the more structured CP programs in urban centres, this finding could also have been due to the lack of organization and training some paramedics received before practicing CP. Specifically, several rural CP paramedics expressed frustration related to the lack of training they received, and having to cancel home visits or wellness clinics in order to respond to emergency calls.

## 4.2 Relevant Changes to Paramedicine in Ontario

Currently in Ontario, CP duties are not outlined in the Ambulance Act, the Basic Life Support Patient Care Standards, or the Advanced Life Support Patient Care Standards



(MOHLTC, 2012). Nonetheless, there have been some legislation changes that have increased the paramedic scope of practice, such as allowing paramedics more decision authority to determine whether other health services are more appropriate destinations for treatment of patients rather than immediate transport to hospital emergency departments (MOHLTC, 2017). Thus, there is a need to determine how CP practices should best be reflected in provincial acts, standards, or through other strategies such as self-regulation of practice.

Not surprisingly, the advent of CP programs has been an important rationale for supporting the move towards paramedic self-regulation in Ontario (Ontario Paramedics Association, 2013). It could be argued that the additional knowledge, skills and responsibilities (e.g., checking blood sugar levels, consulting on medications, and determining transport destination) are important considerations related to the need for self-regulation. Perhaps not surprisingly, a survey conducted by the Ontario Paramedics Association was administered to paramedics and paramedic personnel in Ontario, and the results indicated that 74.4% of paramedics and 85.7% of paramedic educators either agreed or strongly agreed with self-regulation in Ontario (Ontario Paramedics Association, 2013).

Concurrent with the paramedic-led drive towards self-regulation in Ontario, paramedic education has been on the verge of change in Ontario as well. Other CP programs in other jurisdictions have established rigorous education standards for community paramedics. In Wyoming, community paramedics have five designations: community paramedic technician (diploma), community paramedic clinician (associate's degree), community paramedic practitioner (bachelor's degree), community paramedic advanced practitioner (master's degree), and community paramedic consultant (doctoral degree) (Cooper and Salmon, 2017). It is clear

that further study needs to be completed before determining what level of education paramedics practicing CP in Ontario should possess.

With the recent implementation of Bill 163 *Ontario First Responders Act* in 2016 regarding first responder PTSD *First Responders Act (Post-Traumatic Stress Disorder) 2016, S.O. 2016, c. 4 – Bill 163* (First Responders Act, 2016) and Bill 148 *Fair Workplaces, Better Jobs Act* in 2017 regarding personal leave allowance *Fair Workplaces, Better Jobs Act 2017, S.O. 2017, c. 22 – Bill 148* (Fair Workplaces, Better Jobs Act, 2017), there are substantive additional operational, financial and legal constraints placed on paramedic employers to provide better working conditions for paramedics in the province of Ontario.

### 4.3 Limitations

Though it was not the objective of this paper to determine if CP improves morbidity and/or mortality in relation to patient centred outcomes, there is some evidence indicating that CP has been beneficial in assisting patients improve or better manage their chronic diseases, decreasing emergency department visits, and reducing 911 calls of frequent callers (Brydges et al., 2016 ; Agarwal, Pirrie, Mcleod, Angeles, Tavares, et al., 2019). Additionally, the results in chapter two indicated that the majority of paramedics who provided home visit services believed that CP alleviated emergency 911 calls. Thus, a limitation of this thesis was that it did not determine the relationship between CP and patient morbidity and/or mortality improvements, and neither did it explore or address the economic impact of CP as it related health care costs. These are important areas worthy of further exploration in future research studies.

It was difficult to obtain demographic data regarding paramedics from EMS Providers across Northern Ontario. This presented difficulties for comparing the paramedic sample in this

study with the rest of the EMS population in northern Ontario and to other EMS provider populations across Ontario.

#### 4.4 Implications for Paramedics and Service Providers

This study demonstrated the importance of QoWL for paramedics, especially in a rural and Northern setting. The findings from chapter three demonstrated paramedics who practiced CP experienced a higher QoWL. An implication for this finding is that it can be used to show paramedics and/or employers who were not in favour of CP, that participating in this program may have positive occupational health-related benefits. Additionally, the overall mean QoWL score of 73.99 for paramedics from this study was generally average when compared to scale norms. Front-line paramedics and paramedic senior command personnel may be able to use this data to develop or improve workplace mental wellness initiatives. Specific findings provide a better understanding of what personal and organizational factors may predict overall QoWL, general well-being, home-work interface, job/career satisfaction, control at work, working conditions, and stress at work.

Paramedicine is an inherently stressful profession, and although most paramedics may anticipate what they will experience when they are responding to an emergency, there is still little control on their reaction to that critical incident and what consequences there may be immediately or afterwards on their work and home lives. However, having an organizational culture that offers mental health supports may decrease morbidity due to poor QoWL. Not only does understanding and improving QoWL potentially benefit organizational effectiveness and employee health, it may also improve the quality of care that critically ill patients are receiving if their pre-hospital care providers are working at optimum health themselves. By understanding

aspects of QoWL and psychological well-being, it increases the probability of having improved overall physical health and well-being as well.

Community paramedicine is still a developing program that has shown to be successful for improving the health and well-being of patients, and this study provides evidence that practicing CP may improve occupational experiences of paramedics (Brydges, Denton & Agarwal, 2016). This study also adds to the sparse research that has assessed paramedic attitudes and perceptions towards this new community-based program. For future research related to CP programs, it may be beneficial to collect information concurrently regarding both patient and paramedic experiences of CP to ensure a more holistic evaluation of the interface of care.

Paramedics with experience practicing CP identified several issues in relation to CP: a lack of training, service interruptions, and patient data management issues. Implications from these findings suggest that there is a need to enhance CP specific training so that it is more tailored to the needs of paramedics (e.g. more education on social determinants of health and mental health of patients). An additional implication to mitigate services interruption issues is to explore alternative scheduling and planning of CP activities, and if funding is available paramedic shifts can be scheduled so that they are solely focused on CP duties. Another implication related to patient data management issues is to research and purchase relevant software that can be utilized to monitor and track CP interactions. It is also clear that there is likely a benefit for community paramedics and paramedic commanders to seek opportunities to share best practices with each other. Additionally, rural paramedics experienced more desirable levels of stress at work compared to urban paramedics, and they were less positively receptive of CP than urban paramedics. An implication of this finding may be other paramedic services that

may not have begun the development of CP programs can use this data to motivate paramedics to be more open to practice CP.

## 4.5 Recommendations for Future Research

There are two main areas worthy of more focused research at this time: (1) mental health of paramedics in Ontario, and (2) quality of work life and its relation to CP.

With an increased emphasis on mental health in the workplace over the past few years, it would be beneficial if paramedic services administered their own frequently administered evaluations, using QoWL and/or other mental health scales, on a regular basis to gain further insight into the mental health and well-being of their employees, with the ability to track changes over time. This may help stimulate the dialogue around mental health, inform program development and improvement, and subsequently help reduce the stigma surrounding mental illness. Having data related to mental health of their employees can also help managers manage and mitigate the impacts related to occupational stress. If employers understand and address the factors that may affect QoWL and/or mental health and well-being, it may also lead to improved organizational effectiveness, such as: higher productivity, lower attrition and absenteeism, less physical injury, and an overall improved organizational culture that reflects support for workers.

Another area for potential future research is to compare the QoWL of paramedics and community paramedics from different jurisdictions, provinces, and countries. It is important to note that CP is also practiced in other countries such as Australia, United States, and the United Kingdom and these programs have been established for longer than Canadian CP programs. An international comparison of quality of work life of community paramedics from different countries, who have paramedics that have practiced CP for a longer period of time, would be

especially informative. This would provide useful evidence to inform the continued development of CP in Ontario and across Canada.

Additionally, other researchers and paramedic organizations may choose to use the JDCF as a theoretical construct to support other studies and evaluation activities. This framework provides a valuable explanatory tool for explaining how job demands and control at work affect the occupational experiences of employees (Karasek, 1979). This study was able to successfully apply this framework to a paramedic population, and it would be interesting and useful to apply it in other populations and contexts.

## 4.6 Conclusion

The purpose of this thesis was to gain insight into factors associated with quality of work life and perspectives on community paramedicine from paramedics working throughout Northern Ontario, Canada. Quality of work life appears to be related to the occupational stress that is experienced by paramedics. The findings demonstrated that CP programs are well supported by paramedics across rural and Northern Ontario. However, these programs have the opportunity for further improvement given that they receive adequate support to ensure program sustainability. Findings from this study may help assist paramedic employers and decision-makers in designing and implementing initiatives to mitigate occupational stress while enhancing paramedic QoWL. These findings may also aid with CP program development and improvement for paramedic services in other rural and Northern contexts.

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## Appendix A: Invitation Letter to Paramedics



Dear Paramedic,

We would like to invite you to participate in an important survey about your perspectives related to community paramedicine, work-related stress, and quality of work life in Northern Ontario.

Participation is voluntary, the decision is entirely yours. Please understand that you are under no obligation to complete this survey or participate in the research, and your decision will in no way impact your employment as a paramedic. Other paramedics and/or your supervisors will not know what you answer on the survey, nor will they have access to your information or responses once you complete the survey.

If you are interested in continuing with your participation in this study, please review the attached Information Letter for Research Participants (PDF attachment). **Once you have completed the entire survey, you will have the choice for your name to be entered into a draw to win a free Apple iPad. This is strictly voluntary. Please note that names and/or e-mail addresses will be stored separately these will not be linked with individual survey responses.**

Thank you in advance for your interest and willingness consider contributing to this study. Please do not hesitate to contact me at anytime if you have any questions or concerns.

Sincerely,

Stephen Ritchie, PhD

Tel: 1-800-461-4030; Ext. 1046 Fax: 1-855-512-4321 Email: [cpstudy@laurentian.ca](mailto:cpstudy@laurentian.ca)

[Information Letter attached]



## **APPENDIX B: INFORMATION LETTER FOR RESEARCH PARTICIPANTS**

**STUDY TITLE:** Paramedic Perspectives on Community Paramedicine and Quality of Work Life in Northern Ontario

**RESEARCH TEAM:** Jordan Nixon, BPHE (School of Human Kinetics, Laurentian University), Stephen Ritchie, PhD (School of Human Kinetics, Laurentian University); Jill Sherman, MPH (Centre for Rural and Northern Health Research at Laurentian University), Zsuzsanna Kerekes (Centre for Research in Occupational Safety and Health at Laurentian University).

**The following information is provided to help you decide whether or not to take part in this study. Please take the time to read all the information carefully. If there is anything you do not understand or if you would like more information, please contact:**

Stephen Ritchie, PhD

Tel: 1-800-461-4030; Ext. 1046 Fax: 1-855-512-4321 Email: [cpstudy@laurentian.ca](mailto:cpstudy@laurentian.ca)

**PURPOSE OF THE STUDY:** The primary purpose of this study is to learn about paramedics' perspectives and experiences related to Community Paramedicine (CP). CP is a relatively new component of paramedicine that refers to a non-emergency, community-based service conducted by paramedics with a focus on health education and health promotion, illness management, injury prevention, and referral to other health services. The secondary purpose of this survey is to gain insight into the work-related stress and quality of life of paramedics in northern Ontario.

**NATURE OF PARTICIPATION:** You are invited to complete an online survey on community paramedicine and work-related stress and quality of work life. There is no right or wrong answers, your opinions are very valuable to us. You will also be asked if you are willing to participate in a follow-up telephone interview to further discuss your survey responses pertaining to community paramedicine only.

The survey should take approximately 15-20 minutes to complete, and it can be completed online using the link provided at the end of this e-mail. If you would like to participate but do not have internet access, please contact the research team.

By participating in the study, you have the choice for your name to be entered into a draw to win a free Apple iPad and for a telephone follow-up. This is strictly voluntary. This is also your chance to give your feedback and opinions on all aspects of Community Paramedicine.

**RISKS:** There are no expected physical, social, or economic risks to participating in this study. Please know that your employment will not in any way be affected by participating or not participating. Other paramedics or administrators will not know whether you complete the survey, and they will not have access to your individual information or responses.

In the unlikely event that you feel any emotional distress after completing the survey, you may call: (1) **211 Information and Referral** telephone services to access any health or crisis related resources or assistance in your area; or (2) the **Ontario Mental Health Helpline** toll-free at 1-866-531-2600; both resources are available 24 hours per day, every day. Alternatively, you can contact the Peer Support and Family Assistance Support Line (TEMA) toll-free at 1-888-288-8036 between the hours of 8:00am



and 11:00pm for resources or assistance specifically intended for all public safety personnel and their families. There is no cost for these services.

**BENEFITS:** This study will aid in determining program effectiveness and gain insight into work-related stress and quality of life experienced by paramedics in rural and northern communities in Ontario. Results may lead to the development of more appropriate systems, supports and resources to reduce job-related stress and improve quality of work life.

**CONFIDENTIALITY:** Direct quotes may be used anonymously, but it may be possible that your identity could be deduced from your responses. We encourage you to be as honest and open as you can, but aware of the potential for disclosure. The research team employs the following procedures to maximize confidentiality for research participants:

- The surveys are completely **anonymous**.—That said, we will not be able to tell who has completed the survey and who has not. This means that once your answers to the survey questions are submitted, we will be unable to remove your results, since we will not be able to link any responses to a particular individual.
- If you do agree to provide your name/e-mail address for the Apple iPad draw and/or telephone follow-up, please note that your contact information will not be linked to your survey responses and that you may request to have your name and e-mail address removed if you provide it at the end of the survey.
- Only the research team will have access to your personal information, online data, and recordings (if you decide to also participate in the follow-up telephone interview). Any paper documents will be stored in locked offices; electronic files (from online survey) will be stored initially on the secure REDCap server and then on the Centre for Rural and Northern Health Research secure computer server.
- Some data may be stored on a researcher's password protected computer during the analysis process; however it will have all identifying elements removed.
- All files will be kept for up to seven years after the study is published and will then be deleted and shredded.

**YOUR RIGHTS:** Your participation in this study is entirely voluntary. You have the right to remove yourself at any time without penalty or consequence. Your decision will in no way affect your employment or future as a paramedic, either by participating, or not participating in the study. You also have the right to have your personal information held confidential, or to be removed and destroyed at anytime.

**RESULTS:** This study is designed to provide valuable information to report on the work-related stress and quality of work life experienced by paramedics in northern Ontario and paramedic perspectives of community paramedicine.

**CONCERNS:** If you have any questions regarding your rights or concerns as a participant, you may contact someone who is not attached to the research team:

Research Ethics Officer, Laurentian University Research Office  
 705-675-1151 ext. 3213, 2436 or toll-free at 1-800-461-4030  
 Email: [ethics@laurentian.ca](mailto:ethics@laurentian.ca)

## Appendix B: Laurentian University Research Ethics Board Certificate



### APPROVAL FOR CONDUCTING RESEARCH INVOLVING HUMAN SUBJECTS Research Ethics Board – Laurentian University

This letter confirms that the research project identified below has successfully passed the ethics review by the Laurentian University Research Ethics Board (REB). Your ethics approval date, other milestone dates, and any special conditions for your project are indicated below.

TYPE OF APPROVAL / New X / Modifications to project / Time extension	
Name of Principal Investigator and school/department	Jordan Nixon, Human Kinetics, supervisors, S. Ritchie, J. Sherman, Z. Kerekes
Title of Project	Paramedic Perspectives on Community Paramedicine and Quality of Work Life in Northern Ontario
REB file number	6009514
Date of original approval of project	October 28, 2016
Date of approval of project modifications or extension (if applicable)	
Final/Interim report due on: (You may request an extension)	October 28, 2017
Conditions placed on project	

During the course of your research, no deviations from, or changes to, the protocol, recruitment or consent forms may be initiated without prior written approval from the REB. If you wish to modify your research project, please refer to the Research Ethics website to complete the appropriate REB form.

All projects must submit a report to REB at least once per year. If involvement with human participants continues for longer than one year (e.g. you have not completed the objectives of the study and have not yet terminated contact with the participants, except for feedback of final results to participants), you must request an extension using the appropriate LU REB form. In all cases, please ensure that your research complies with Tri-Council Policy Statement (TCPS). Also please quote your REB file number on all future correspondence with the REB office.

Congratulations and best wishes in conducting your research.

Rosanna Langer, PHD, Chair, Laurentian University Research Ethics Board

## Appendix C: Northern Ontario Paramedic Survey

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## Northern Ontario Paramedic Survey 2016

IMPORTANT NOTE: Complete this survey in FULL, and you will be eligible to win a FREE Apple iPad!

Welcome to the Northern Ontario Paramedic Survey!

Instructions to Survey Participants :

The primary purpose of this survey is to learn and receive feedback about your experiences as a paramedic in Northern Ontario. The secondary purpose of this survey is to obtain information about your overall quality of work life (QOWL), and operational stress injury (OSI).

To respond to each question or statement, please select the answer that reflects who you are, or is closest to the way you feel in your role as a paramedic. There are also a few questions requiring additional short answer written responses. The entire survey should take you less than 15-20 minutes to complete. You also have the option to save your responses and return back to them to finish your survey at a more convenient time

---

**If you have read and understood all of the information in the "Information to Participants" document and choose to participate, please read and answer the following statements. Your consent to these statements is required in order to proceed to participate in the survey.**

The "Information for Research Participants" document is for you to keep for your records.

### 1. Consent to Participate in Research Survey (Required for participation)

You have received a copy of the letter entitled "Information for Participants" and have read and understood all the information. You understand that:

a) There is no direct benefit to me from participating in this study other than an opportunity to provide my feedback and/or opinions on all aspects or experiences with your work life. You understand that once my survey is completed, you will have the chance to have your name entered into a draw to win a free Apple iPad.

b) The information you provide in this survey will be kept anonymous and confidential.

c) It is my choice to take part in this survey. You are under no obligation to do so. The care and services you provide within to patients/clients will not be affected in any way by whether or not you take part in this survey.

d) You are free to have your survey and all associated information removed from the study at any time, for any reason without penalty. Your survey and all relevant information will be immediately destroyed upon receipt of this request.

e) No personal identifying information about you will be given to anyone or be published

[www.project-redcap.org](http://www.project-redcap.org)

**REDCap**

**without your permission, unless required by law.**

**f) You have been given the opportunity to ask questions about this study.**

**Please note: Your answers are very valuable to us and though not mandatory, we kindly ask you complete ALL questions.**

I have read and fully understand the information about the study. I acknowledge that I am free to withdraw myself from the study at anytime without any penalty. I consent to complete the online survey. You must click "yes" to complete the survey.

☐ Yes  
☐ No



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**Please respond to the following questions.**

How many years have you been employed in the paramedic profession?

---

Please identify your professional designation.

- ☐ Primary Care Paramedic
- ☐ Advanced Care Paramedic
- ☐ Critical Care Paramedic
- ☐ Modified or Light Duty

What is your employment status?

- ☐ Full-time
- ☐ Part-time
- ☐ Casual

Approximately how many hours do you work in a typical week?

- ☐ Less than 20
- ☐ 20 to 40
- ☐ 41 to 50
- ☐ 51-60
- ☐ More than 60

Approximately how many days have you been off due to ill health in the past year?

- ☐ None
- ☐ 1 to 5
- ☐ 6 to 10
- ☐ 11 to 15
- ☐ More than 15

What is your age?

---

What is your sex?

- ☐ Prefer not to answer
- ☐ Male
- ☐ Female

In what district do you work in most often?

- ☐ Cochrane
- ☐ Manitoulin-Sudbury
- ☐ Rainy River
- ☐ Thunder Bay
- ☐ Algoma

In what language are you able to offer services when visiting patients/clients? (Check all that apply).

- ☐ English
- ☐ French
- ☐ Other

In addition to studies in paramedicine, have you completed any other education? Check all that apply.

- ☐ College Certificate
- ☐ College Diploma
- ☐ Undergraduate degree
- ☐ Post-graduate certificate and/or diploma
- ☐ Master's degree
- ☐ PhD
- ☐ Post-Doctoral

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**Please respond to these health-related questions.**

---

In general, would you say your physical health is:

- ☐ Poor
- ☐ Fair
- ☐ Good
- ☐ Very Good
- ☐ Excellent

In general, would you say your mental health is:

- ☐ Poor
- ☐ Fair
- ☐ Good
- ☐ Very Good
- ☐ Excellent

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**For this section please do not take too long over each question; we want your first reaction not a long drawn out thought process. Please do not omit any questions. This isn't a test, simply a measure of your attitudes to the factors that influence your experience at work. Your response is very important to us. Please complete all questions in this section**

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
I have a clear set of goals and aims to enable me to do my job.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I feel able to voice my opinions and influence changes in my work area.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I have the opportunity to use my abilities at work.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I feel well at the moment.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
My employer provides adequate facilities and flexibility for me to fit work in around my life.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
My current working hours/patterns suit my personal circumstances.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I often feel pressure at work.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
When I have done a good job, it is acknowledged by my supervisor.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Recently, I have been feeling unhappy and depressed.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I am satisfied with my life.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I am encouraged to develop new skills.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I am involved in decisions that affect me in my own work.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
My employer provides me with what I need to do my job effectively.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
My supervisor actively promotes flexible working hours/patterns.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
In most ways, my life is close to ideal.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I work in a safe environment.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Generally, things work out well for me.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I am satisfied with career opportunities available for me here.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I often feel excessive levels of stress at work.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I am satisfied with the training I receive in order to perform my present job.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Recently, I have been feeling reasonably happy all things considered.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The working conditions are satisfactory.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I am involved with decisions that affect members of the public in my own area of work.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I am satisfied with the overall quality of my working life.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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**Below is a list of items that describe different aspects of being a paramedic. After each item, please click the value of how much stress your work has caused you over the past 6 months, using a 7-point scale that ranges from 1 "No Stress At All" to 7 "A Lot of Stress"**

	1 No stress at all	2	3	4	5	6	7 A lot of stress
Shift work.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Working at night.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Over-time demands.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Risk of being injured on the job.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Work-related activities on days off (e.g. community events)..	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Traumatic events (e.g. MVA, injury, death).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Managing your social life outside of work.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Not enough time available to spend with friends and family.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Paperwork.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Eating healthy at work.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Finding time to stay in good physical condition.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Fatigue (e.g. shift-work, over-time).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Occupation-related health issues (e.g. back pain, PTSD).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Lack of understanding from family and friends about your work.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Making friends outside the job.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Upholding a "higher image" in public.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Negative comments from the public.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Limitations to your social life (e.g. who your friends are, where you socialize).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Feeling like you are always on the job.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Friends/family feel the effects of the stigma associated with your job.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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**Community paramedicine refers to a non-emergency, community-based service conducted by paramedics with a focus on health education and health promotion, illness management, injury prevention, and referral to other health services. Community paramedic duties take place during wellness clinics, home visits and/or referrals for home visits from other health care professionals. For each of the following statements or questions select the best response (answer) based on your opinion or how you feel with respect to your involvement in or knowledge of the community paramedicine program.**

Have you participated in a community paramedicine program?

- ☐ Yes  
☐ No

If you selected "No", please click "Next Page" to page 11 of the survey to complete the last few questions.

If yes, which CP services were you involved in?  
(Check all that apply).

- ☐ Wellness clinics  
☐ Home visits identified by you or your colleagues  
☐ Home visits identified by other health care professionals  
☐ Referrals to another provide or service

How long have you practiced community paramedicine?

- ☐ Less than 3 months  
☐ Between 3 to 6 months  
☐ Between 6 months to 1 year  
☐ Over one year

Were there any other CP services not listed above that you were involved in?

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**The following items ask your opinion about the impact of the Community Paramedicine program's Wellness Clinics.**

**Please indicate the extent to which you agree or disagree with each statement.**

	Not applicable/ do not know	Strongly Disagree	Disagree	Agree	Strongly Agree
I believe that the wellness clinics were acceptable to patients/clients.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The wellness clinics were effective at improving the well-being of patients/clients.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The wellness clinics were an effective way to reduce the non-emergency use of 911 services and emergency department visits by patients/clients.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is there anything that you think should be done to improve the wellness clinics?	_____				

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**The following items ask your opinion about the impact of the Community Paramedicine program's Home Visits (ad hoc or referral from other health care professionals). Please indicate the extent to which you agree or disagree with each statement.**

---

	Not applicable/ do not know	Strongly Disagree	Disagree	Agree	Strongly Agree
I believe the home visits were acceptable to patients/clients.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I believe the home visits were effective at improving the well-being of patients/clients.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I believe the home visits were an effective way to reduce non-emergency use of 911/EMS services and emergency department visits by patients/clients.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is there anything that can be improved for home visits?					

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**The following items ask your opinion about the impact of the Community Paramedicine program's referrals to other health care professionals using the PERIL tool. Please indicate the extent to which you agree or disagree with each statement.**

	Not applicable/do not know	Strongly Disagree	Disagree	Agree	Strongly Agree
The referrals were acceptable to patients/clients.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The referrals were effective at improving the well-being of patients/clients.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The referrals were effective at reducing non-emergency use of 911 services of patients/clients.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Is there anything else that was successful or can be improved for the referral process to other health care professionals?

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**These next questions will ask your opinion on other aspects of community paramedicine.**


---

	Not applicable/ do not know	Strongly Disagree	Disagree	Agree	Strongly Agree
I found the patients / clients in the community paramedicine program receptive and appreciative of the care and services I provided. (i.e. ad hoc visits, referrals, wellness clinics).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I found the community paramedicine program tasks interfered with my regular work duties; it was difficult to accommodate them and balance my overall workload effectively.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The community paramedicine program has improved my sense of belonging in the community where I work.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I believe community paramedicine helped in improving camaraderie with my fellow paramedic colleagues.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I believe practicing community paramedicine helped keeping me updated on my clinical skills.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I believe that expanding the paramedic scope of practice to include community paramedicine duties will help reduce operational stress injury or other injuries.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Right now, community paramedicine is a pilot project in northern Ontario with only a certain number of paramedics involved. Do you agree that more paramedics should be allowed to practice community paramedicine across Ontario?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is there any additional health-related knowledge/skills that you learned practicing community paramedicine?	<hr/>				
I often interact with patients/clients when not on-duty in public places (Tim Horton's, grocery stores, etc).	<input type="checkbox"/> Yes <input type="checkbox"/> No				
How often do you interact with patients when you are not on-duty?	<input type="checkbox"/> Never <input type="checkbox"/> 1-2 times a week <input type="checkbox"/> 3-5 times a week <input type="checkbox"/> 6-10 times a week <input type="checkbox"/> More than 10 times a week				
Overall, from your involvement and experience practicing community paramedicine, how satisfied are you with the impact and outcomes of the program?	<input type="checkbox"/> Not applicable/ do not know <input type="checkbox"/> Very Dissatisfied <input type="checkbox"/> Dissatisfied <input type="checkbox"/> Satisfied <input type="checkbox"/> Very Satisfied				
Would you recommend community paramedicine to other paramedic services?	<input type="checkbox"/> Yes <input type="checkbox"/> No				

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**Considering your experiences as a paramedic practicing community paramedicine, please share your thoughts on the following questions. Your responses could reflect any aspect of the program, the patients / clients, the community, or your role in the program.**

What do you like about the community paramedicine program?

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Is there anything that you do not like about the community paramedicine program?

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Do you have any suggestions for how to improve the community paramedicine program for both patients and/or paramedics?

---

Do you have any additional comments?

---

Would you consider practicing in a Community Paramedicine program?

- ☐ Yes  
☐ No

If you had a choice in your work-related duties, which duties would you prefer to practice?

- ☐ Only regular EMS duties  
☐ Only community paramedicine duties  
☐ Both community paramedicine & regular EMS duties

Please explain.

---

If you would like to be eligible to have your name entered into a draw for a free Apple iPad, please provide your name and e-mail address below so the Laurentian Research Team will contact you. Would you like to participate in this draw? THIS IS NOT MANDATORY.

- ☐ Yes  
☐ No

Would you like to provide your name and email address to have one of the members from the Laurentian University research team Laurentian University contact you for a follow-up phone interview.?

- ☐ Yes  
☐ No

What is your first and last name?

---

(Please note your name will not be disclosed to anyone except to the Laurentian University research team.)

What is your e-mail address?

---

(Please note your e-mail will not be disclosed to anyone except for the Laurentian University research team.)

## Appendix D: QoWL Norms

PERCENTILE TABLE								
PERCENTILES*		GWB	HWI	JCS	CAW	WCS	SAW	Full scale WRQoL
Lower QoWL	10	6-18	3-7	6-15	3-8	3-9	2-4	1-66
	20	19	8-9	17	9			67-72
	30	20		18-19		10		73-74
Average QoWL	40		10	20	10			75-77
	50	21		21		11		78-80
	60		11	22	11		5	81
Higher QoWL	70	22		23				82-84
	80	23	12	24	12	12	6	85-86
	90	24	13	25	13	13	7	87-90
	99	25-30	14-15	26-36	14-15	14-15	8-10	91-100